



Advances in the
TACTICS OF THE FUTURE

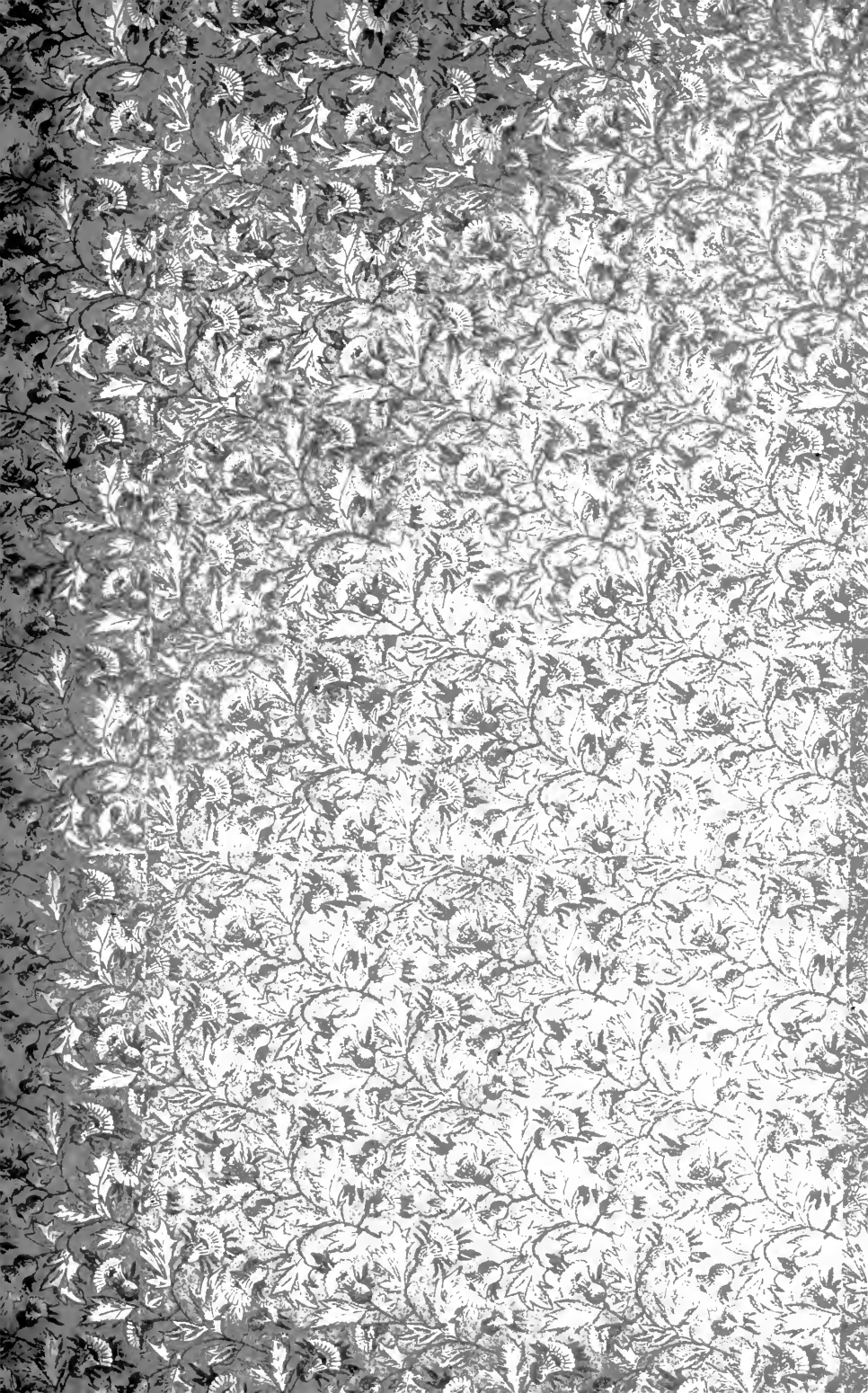
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INTERNATIONAL SERIES

EDITED BY

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Inquiries into the Tactics of the Future.

DEVELOPED FROM

MODERN MILITARY HISTORY.

BY

FRITZ HOENIG.

"THE WORD IS FREE, THE DEED MUTE, OBEDIENCE BLIND."

Translated from the Fourth German Edition

BY

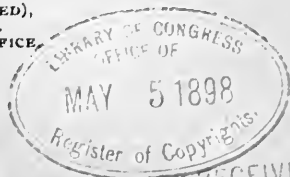
CARL REICHMANN,

First Lieutenant Ninth Infantry.

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EDITOR'S PREFACE.

The book herewith presented for the first time in English is a development of the work entitled "Two Brigades," and in its present form is, as the author says, what he originally had in mind. In describing the process of evolution by which the book has reached its present form, the author remarks that though the original work was well received in South Germany, France, Austria, and other European countries, it met with a cold reception in North Germany; probably because nobody likes to have his own mistakes pointed out. He intimates that although the Official Account of the Franco-German War is based on all publications and documents that appeared in print previous to its publication, and although it is undoubtedly the best technical account of military operations ever published, it cannot be denied that some things have either been glossed over or that the compilers were, in some instances, misled by the defective accounts and reports of eye-witnesses. In fact, it is impossible to avoid the impression that the German General Staff, in compiling the Official Account, was careful to let no opportunity slip to increase the prestige of the German arms, and especially to avoid impairing that prestige when unpleasant facts could be passed over with a few words. He also points out errors contained in regimental histories, and has taken great pains to write as nearly as possible the exact

truth in regard to events that have often been described with more patriotism than accuracy.

The reader of any work on the Franco-Prussian War is likely to be so strongly impressed with the visible military power of Prussia, and so dazzled by the series of events which in a campaign of a few months brought to its knees the first military nation of Europe, that it is difficult for him to realize that on the side of the Germans military matters were not altogether perfect. It is new and interesting to find that there was tactical deficiency on the part of some of the higher German leaders, and that the lack of organization of the system of reports and messages on the battlefield left Von Moltke for some hours at Gravelotte without definite and reliable information of what was going on. We have heard so much of the magnificent energy of the German leaders in marching to the sound of the cannon and promptly joining battle wherever they could, that it is wholesome for us to read that this wild energy of the subordinate leaders was not always productive of the best results, and that the troops often got completely beyond the control of their generals. The lack of tactical reconnaissance was more marked than we have been led to believe; and, with all due respect to the superior organization and the superior training of the German Army, we are reminded of the old saying, that "Nothing succeeds like success."

Hönig unites the qualities so desirable in a tactical writer; namely, a deep knowledge of his subject and of human nature, a facility of expression, fearlessness in setting forth his views, and a spirit of philosophical justice, which is shown in giving credit to his enemies as well as bestowing praise upon his friends. Even when we cannot altogether agree with his views, we are forced to respect them, and his book will be welcomed by those who are most

interested in military literature and tactical training. In view of the many devices for sheltering troops under all circumstances, which has been somewhere happily designated as "the cult of fear," it is refreshing to read the announcement that great loss must be boldly faced and not shunned, and that officers and troops must be instructed that these losses are inevitable and have to be unflinchingly met. In the same spirit is made the assertion that only those men talk of night battles who are afraid of facing an enemy in daytime. It excites our admiration to find a gifted German soldier saying that the French infantry at Wörth and Gravelotte was one of the best that ever fought; and in view of the manifest defects of short service, which is now the rule everywhere in Europe, we can easily share his doubt whether any French infantry will ever again fight with the same determination.

It is, too, rather unusual to find a European author who refers to the War of Secession as an evidence of a sound military fact, and we cannot help remarking how far in advance of most of the European critics he is when we read the following passage: "The armor shields and armored clothing prepared by the Danes and others do not seem suitable for field service as protection against projectiles, but, on the other hand, the construction of rifled trenches, etc., by means of the spade, will play a great rôle in future battles; occasions for their use will arise for the attacker as well as for the defender, since it is very probable that there will be battles of several days' duration—which, however, are nothing new. In this connection it is sufficient to recall the North American Civil War."

When a German critic can do full justice to a French enemy, and acknowledge virtually that military lessons can be drawn from Spottsylvania as well as from Gravelotte,

the American reader must necessarily be predisposed in his favor, and it is confidently believed that this favorable predisposition will not be in any way impaired by the perusal of Hönig's remarkable book.

Washington, D. C., November 16, 1897.

PREFACE TO THE SECOND EDITION.

"Books have their fortunes," says the proverb, and this one has been no exception. Perhaps it will interest the reader to have me tell something about it; anyway, that is what prompts me to do so.

The book appeared in 1881 under the title of "Two Brigades," chiefly upon the urgent request of an officer, of literary fame, who has since died, although I should have preferred to postpone the publication for some years; in addition to the above motive, it was the then controversy whether it was to be long-range fire or short-range fire, open order or a combination of close and open order, day or night battles, etc., that prompted me to publish the book, believing that I would be able to contribute something toward the settlement of the questions in dispute.

Any historical-tactical experiences I might want to draw upon would, of course, have to be beyond the pale of doubt; in that case it was to be premised that in some places the book would not be received with favor, for no one likes to have his errors pointed out. Of two cases, but one was possible: either the Official Account was correct, or mine, as their discrepancies are such that they cannot be reconciled. But if anyone will take the trouble to compare the History of the 57th Regiment published after the "Two Brigades" and the Official Account, he will at once admit that, aside

from some small details, the author of the "Two Brigades" is right.

The Official Account of the attack of the 38th Brigade on August 16, 1870, may therefore justly be considered as superseded, and that of the attack of the 28th Brigade on July 3, 1866, as rectified in many essential points. I do not know how the Official Account of the latter was prepared; as regards the former, a well-known general officer, capable of rendering judgment, wrote to me on October 10, 1883, that, so far as he was concerned, the description of the episode in question of August 16th, as given in that work, left much to be desired, because (out of consideration for some of the survivors) it silently passed over one of the most important points: the retreat of the 10 intact battalions of the 20th Division at the very moment when Wedell's brigade advanced—through some misunderstanding! In the History of the 57th Regiment by Baron von Schimmelfmann I. reference, so far as that may be expected from a work of that character, to the incorrect statements of the Official Account, is made by special note.

The edition before me differs essentially from the first one—in fact, it is an entirely new book, such as I may have had in mind from the first. Many communications from officers of high and low rank have enabled me to interweave events of importance, to elucidate others; and in that respect my thanks are due, in the first place, to Major-General von Hiller, who commanded the 28th Brigade at Königgrätz; to Lieutenant-Colonel von Leszczynski, of the auxiliary establishment of the great General Staff, who in 1866 was with the 1st Battalion of the 17th Infantry Regiment; and to others, though I do not name them.

The Introduction and the Second Part had to be completely rewritten. Though the sentence placed at the head of the

book remains correct from the general tactical point of view, still no intelligent man may gainsay the great influence exercised upon tactics by the small-caliber rifle, smokeless powder, and the increased effect of artillery fire. In making investigations in this field the new edition has taken up various questions of general interest regarding the future, which made the addition of a *Third Part* indispensable. The historical part, on the other hand, has merely been amplified.

A few more remarks on the fortunes of the First Edition: According to my observations, the same did not become much known in Northern Germany, owing perhaps to some inconvenient statements contained therein. I merely mention the fact, and am not deeply concerned about the reasons therefor; the reader may draw his own conclusions. The "reserve" shown, however, failed of its object in this case. The book was most favorably received in all countries, particularly in Austria-Hungary, France, Switzerland, Sweden, Russia, and the Netherlands.

One day in 1883, when I was at the Hague, I called on the Dutch Minister of War, Den Beer Portugäl; the object of my visit is immaterial. He received me with great civility and invited me to dine with him next day. There I met, among other guests, several general staff officers from the Hague, the minister having returned my call in due form. The repast was a splendid one, and the tone at the table such as may only be found among well-bred and well-educated men. You could feel that these men had seen—and had learned something; when the roast was on the table, the Minister of War rose and most cordially toasted, in fluent German, the German comrade and above all the author. I responded in Dutch, and, after the lady of the house had withdrawn, a genial mood began to reign. The gentlemen

proved thoroughly familiar with my writings, particularly with the "Two Brigades." Some of them recited entire sentences, much to my surprise, and the War Minister himself proved no exception. One of the gentlemen told me that the book, which costs two florins in Holland, had brought ten florins in some town (Flushing?) at the annual auction of the regimental library. That, he said, showed conclusively how much the book was held in esteem. If this edition should meet the eyes of these gentlemen, I again convey them herewith my thanks for the pleasant hours passed in their society.

From Austria I have received quite enthusiastic comments.

French officers, too, took much interest in the "Two Brigades." One of them wrote me that, book in hand on the battle-field, he endeavored to place himself in the situation of the 38th Brigade near Mars-la-Tour, and that he vividly realized the awful drama there enacted; that in Algiers the book was his constant companion; that the German author was his master and favorite writer, etc.

Nor have tokens of approval failed to come from the Fatherland. In the fall of 1882 I received by mail a pretty drinking-horn. It bore the inscription: "To the Author of the 'Two Brigades.'" I herewith convey my thanks to the kind givers. The drinking-horn is my pride, for the book has evidently pleased the senders.

In the spring of 1884 I called on General of Cavalry von Willisen, upon the request of a distinguished friend. The general received me with the words: "I knew that you were the author of the best book on modern infantry action, but I can hardly believe that you are also the author of the

anonymous writings on cavalry,* although I am assured by two corps commanders that you are. Ever since I have been wanting to see you, and if you had not come to me, I should have gone to see you, if for no other reason than from a feeling of indebtedness, because heretofore no one has written so clearly and convincingly on the employment of cavalry. Is it true that you are the author of these writings?" I answered in the affirmative, and the general shook me heartily by the hand and, as he said, gratefully! He said that he had learned much from my writings. I have been in constant and cordial communication with him ever since. One day he led me to his desk, and, taking from it a rather ragged book, he said: "Look at it; you will be gratified." It was the "Two Brigades." On a blank leaf was a list of gentlemen to whom he had loaned the book; there were about fifty of them, among them a number of general officers. "Not one," he said, "has read it without enthusiasm. It has traveled a good deal, and its outward appearance is not very fine, but it remains one of my favorite books."

One corps commander says that the description of the historical-tactical events equals a photograph in precision. Lieutenant-General von Legat, formerly commander of the 30th Division and who was my company commander in 1865, wrote me from Metz, that he had visited the battle-field of Mars-la-Tour with the "Two Brigades" in his hand, that he had found my statements and opinions correct, and that the events passed his understanding. General von Hiller has repeatedly thanked me for the precise and correct account of events of the battle of Königgrätz, and quite a number

*1. "On the Armament, Training, Organization, and Employment of Cavalry." 2. "The Cavalry Division as a Battle Unit." 3. "Tactical Directives for the Formation and Leading of the Cavalry Division." All three published by R. Felix, Berlin.

of communications, many of them from Metz and from various regiments, testify to the correctness of my description. In that respect the book has therefore fully accomplished its object, and I hope that in its new form it may be instrumental to some extent in clearing up the various questions now agitating the minds of military men.

Fritz Hönig.

Friedenau, February 12, 1890.

PREFACE TO THE FOURTH EDITION.

Since the appearance of the Third Edition, now completely exhausted, no warlike event of great importance has taken place; still the events in Chili constitute to a certain extent a valuable confirmation of the principles and opinions which were developed in the book before those events, and based entirely on experience and on due consideration of the progress in technique.

Yet practical peace experiments and theoretical study also have clarified tactical theory in many respects, as evidenced in Germany by the many modifications of the various regulations and firing instructions, instructions for field fortifications, etc., and the same may be said of other countries.

In tactics there can be no standstill! The modifications made since 1890 had therefore to be taken into consideration if for no other reason than that for the most part they still have to stand practical test. Discussion, held in keeping with war realities, of the principal questions, particularly of the infantry attack, will therefore continue to form part of our daily bread. I have not limited myself to them, however, but have endeavored to bring all tactical phenomena of the battle-field within the scope of my inquiry. The elimination of old and the addition of new matter was found necessary in order to again bring the contents and form of the book up to date.

Chapter I. of the First Part is the only one that has not been modified; "Events on the Side of the French" has been substituted for "f," Chapter II., of the First Part. A new chapter, "Losses," has been added as section "f" of Chapter V. of the First Part. The Third Part has been supplemented by the chapters on "Extent of Ground in Battle," "Defense," and "Street and Wood Fighting." The chapter "Suggestions Regarding the Reprint of 1889" has been eliminated.

The title "*Inquiries, etc.*," I have retained, because I wish to leave it to the intelligent reader what position to take with regard to my opinions; the inquiries are based throughout on the results obtained in the various armies by experience and experiments.

The example of the 28th Infantry Brigade at Königgrätz is antiquated, to be sure; still I did not feel at liberty to eliminate it from this book, because many wishes expressed to me in the course of time made me aware that its retention was desired, particularly in the Austrian Army. As regards the infantry attack *en masse*, no more instructive instance is to be found to-day than that of the 38th Infantry Brigade at Mars-la-Tour, notwithstanding its failure; but such lessons alone should be drawn from it as are warranted by the facts.

Both illustrations are the result of thorough study on the spot of all the historical material available; in the case of the 38th Infantry Brigade I was able to make some valuable rectifications. Much of it is due to the controversy carried on in the *Militär Wochenblatt*, Nos. 71-78, of 1891. Since an approximately correct historical and tactical account of the events was thereby rendered possible, I was able to strike out all points which up to that time had been in controversy.

Tactics, however, cannot be exhausted by *one* example; on the contrary, as many of them as possible should be adduced. That has been done in the Third Part, where the relation of the defense to the attack has been specially dealt with. I thought it necessary to give special care to tactical reconnaissance and to the many questions closely connected therewith and of more or less importance, including the task of leading an army, and to the discussion of the advanced positions, the season for which, if they ever are to be of any use, has probably been ushered in by smokeless powder. The conclusions drawn will be worthy of note, which does not mean, however, that they are claimed to be correct in every particular.

There is no such thing as infantry tactics in battle any more than tactics of any other arm; and a discussion of the employment of all arms was therefore unavoidable. The tactical considerations kept in mind throughout are those which probably approximate the requirements of the battlefield. All the inquiries have, in the main, reference to the fighting in a pitched battle.

Shortly after the adoption of the Drill Regulations of 1888 an article appeared in the *Militär Wochenblatt*, expressing the wish that discussions of the Regulations should for the present be refrained from. The Regulations were to be subsequently revised, on the basis of the official reports of the corps commanders. The published writings did in fact show much reserve in that respect; the reports of the corps commanders have of course never been made public. But from the failure of the promised revision to materialize it should not be inferred that the same is not necessary; various recent phenomena point to the contrary. Meanwhile there has been ample time to test the fitness of

the Regulations, and further observance of silence would be wrong.

Fritz Hönig.

Friedenau, November 30, 1893.

The improved fire-arms have not only modified troop-leading in battle, but have circumscribed the same and rendered it more difficult.

Tactics must become more psychological, if an army would not forego victory.

Fritz Hönig.

Cleve, October 1, 1881.

INTRODUCTION.

Motto: "Whenever art has decayed, the fault lay with the artists."—*Schiller*.

Fire-arms have undergone great improvements in a comparatively short time, yet it would be rash to say that greater rapidity of fire, greater accuracy, flatter and longer trajectory, and greater penetrative force could not be expected. Although the aims of General Wille, as expressed in "The Field Gun of the Future" and in "The Smallest Caliber" (R. Eisenschmidt, Berlin), may encounter financial and certain technical obstacles, still the time will come when tactics will demand the realization of the principles advocated by him. That future state of technique and its influence on tactics must even now be taken into consideration. Infantry is affected more than any other arm by improved fire-arms and by the increased importance of fire. Yet fire-arms will never extinguish the characteristics of the various arms of the service. Infantry will, as heretofore, carry to the end and decide the conflict, and will be unable to fulfill that duty by fire-action at long range and by the fire of masses delivered at those distances. It must take upon itself the fighting at short range, close upon the enemy, and drive him away by fire and shock, in order to occupy his position. To preclude any misunderstanding of the word *short*, it should be mentioned that according to the Firing Instructions of September 9, 1893, ranges up to 600 meters

are *short* ranges, thence to 1000 meters *medium* ranges, and beyond 1000 meters *long* ranges. It is to be understood, therefore, that infantry will suffer heavy losses in battle.

These the infantry should not shun, nor should it be kept in ignorance that they are impending, and it should be trained in that sense—*i. e.*, to recognize the dangers of the battle-field, because there is no better means to keep infantry in hand than a correct idea of the losses, and the will (reason and energy) to brave the dangers. The action of infantry will, as a rule, be limited to fire-action of masses of skirmishers—any other form would be quickly and prematurely shattered; whether that fire-action of masses of skirmishers be styled “regulation” or “organized” is immaterial to me. In this method of fighting, infantry should be thoroughly efficient, because leading and control can make themselves felt only within certain limits, and frequently become wholly impossible after the dispositions for the attack, since most of the subordinate leaders will soon be *hors-de-combat*. These agencies will not prevent *disorder*. One of the principal tasks to be mastered by infantry that is to be capable of carrying an attack *en masse* through to the end—for the entire question of “infantry tactics” hinges on that point—is that of fighting in disorder and of learning it in time of peace. As any movement is best assured by some system, no matter how simple and how flexible, whenever there is danger of failure from disorder, so infantry in order not to be rendered impotent from the start when set in motion against a common, extensive objective, needs for the skirmish fighting *en masse* certain fixed laws, principles, regulations, which will stand actual test; *i. e.*, there should be some organization to this skirmish fighting *en masse*. Decisive results cannot be gained without the employment of masses, and in that particular former and modern tactics

do not differ. The difference is to be found exclusively in the tactical form by means of which life, energy and aim are to be imparted to some principle; still the difference is considerable, owing to the difficulties of that question. The German infantry also fights in masses of skirmishers; whether sufficiently so, and whether always on correct principles, remain to be seen; and we may note right here that no army has yet organized the skirmish fighting *en masse* in a manner which promises to prove practical.

In comparing past events with the modern task system (*Auftragsverfahren*) as laid down in the Regulations, we might say that the tactical events in front of Wörth, at the Mance ravine, and against La Folie on August 18, 1870—*i. e.*, ideas which failed of success, have been adopted into our Regulations. The task system at these points of the battle-fields was no doubt different from what that of to-day is meant to be. The system was improvised, and not reglementary; it had not been practiced; still in their essential points the two are as much alike as two peas: employment of the troops by dribblets, either without previous deployment and disposition for attack (Wörth), followed by belated, and again by premature, advance of the rear echelons (Wörth, Mance ravine); or with premature dispositions without previous deployment entailing lack of proper arrangement as to depth and width, and belated appearance of the supports (La Folie). In obtaining what results were ultimately gained with much difficulty, the system of tasks had to be perpetually "corrected" without thereby imparting unity and combination to the work—the carrying through of the action; here under the task system all the forces were absorbed by the advanced positions (La Folie), there opposite the main position (Point du Jour), they were not even able to deploy, and yet there was an

abundance of depressions and woods, which it is said are unfavorable to the unity of action and favorable to the system of tasks. The modern task system will certainly lead to better results, because constantly appealing to the tactical judgment of subordinate leaders; but as surely as no lieutenant from his sphere is able to direct a battle, so surely will the cumulation of results gained by any number of detachments charged with tasks fail to decide the battle. Yet healthy tactics require this. We do not mean to condemn the task system on general principles, but one should not expect a pyramid to stand on its vertex. It is not a question of task *or* order system, but of task *and* order system—*i. e.*, we want both and both are compatible when placed in proper relation to each other.

Task implies something *general*, order something *specific*. The former naturally is characteristic of the high command in order that, and because, it may utilize many means; the latter falls to the subordinate command, which is restricted to limits that admit of the execution of an order only, by cramping considerations of space, by its limited sphere of action, and by the narrow front of its objective. That, however, is not the order of things in the Regulations; they extend the task system too far downward.

The experiences of the Guard Corps—particularly of the 1st Brigade of the Guard at St. Privat—speak so decidedly against the system then in vogue that it is superfluous to waste words over it. The Guard had learned mass-fighting only, and that hobby was instrumental at any rate in bringing about some—though insufficient—development of front; our attempt at that time at the task system did not even yield that much. On the other hand, the Saxons at Roncourt—St. Privat, the 38th Brigade at Mars-la-Tour, and Kottwitz's brigade at Loigny knew how to preserve combination

when fighting *en masse*, and they produced considerable effect in each instance. To be sure the attack of the five and one-half battalions of the 38th Brigade failed, but, notwithstanding its many defects, due to circumstances, it is and remains, among all the attacks made *en masse*, the finest example of a tactical offensive against the strategic flank. There was therefore hardly any good reason for declining to investigate whether more could not have been gained by means of timely improvements and by due regard for combined action, than by completely ignoring what good there still remained and by entrusting the consummation of the combat exclusively to the hands of the subordinate leaders.

Intimately connected with these questions is the form and method of giving out orders and tasks. The Field Service Regulations leave no doubt that the written form should be the rule, since they prescribe expressly: "Orders and reports are to be transmitted in writing whenever time and circumstances do not forbid." And further: "The orders of higher troop commanders to their troops will usually be in writing. Even where orders could be communicated orally, as when the troops are assembled, orders of any length will be dictated and taken down in writing. In the case of some simple arrangement or of a single task, the order is given orally, and eventually reduces itself to a mere word of command." According to the Regulations, the task system for infantry tactics begins with the brigade. The latter receives orders and gives out tasks and uses the oral form alone in transmission to the regiments, as do these to the battalions and the latter to the companies, as indicated in Nos. 95, 103, 112, and 113, Part II. of the Regulations of 1889. It should be observed, however, that the company and battalion leaders have to issue specific and clear *orders* in the

presence, if possible, of all platoon or company commanders without infringing on their freedom of execution, while regimental and brigade commanders address the individual tasks to the regiments and battalions. Within the task system there is therefore a line of demarkation between order and task: the former ends with the company, the latter begins with the battalion.

It is desirable and useful on many accounts that battle orders be prepared in writing if possible, and it would not be incompatible either with the task system or with the line of demarkation between order and task, to issue the orders in regard to the former orally, those in regard to the latter in writing. To be sure, during the conflict it will in many cases be most difficult to get an order through to a battalion, and still more so to a company. On the other hand, when reconnoissance has yielded sufficient information and when the fighting of the advance guard or first line has cleared up the situation, troop leaders will in most cases have sufficient time to use the written form, here made applicable both to the order and to the task. A habit is thus formed of ordering only what is necessary, to order it at the right moment and in the clearest and best considered form, and the receiver of the written order has time to reflect on it and impress it thoroughly on his mind. Moreover, the written order seems particularly indispensable for the higher leaders from the mere standpoint of responsibility. The written form of orders should therefore be laid down as a rule for the battle also. Any one who has had practical experience and has attentively followed the course of an action will concede that in war few superfluous orders are given, in peace very many. Subsequent criticism would be instrumental in correcting the superfluous orders of peace-time and in rendering the preparation for the battle-field more real. Battle tactics

require uninterrupted mutual relations between orders from above, communications to the flank, and reports from below. The maintenance of these mutual relations has been rendered much more difficult by the improvements in fire-arms, in that a large number of leaders is early placed *hors-de-combat*, and that the depth of space involved is very much increased. All orders, communications, and reports require therefore more time, and, on the other hand, the superior leader from his station can, even with a good glass, follow but imperfectly the course of the action from its beginning. The difficulties presented by these relatively new phenomena are not sufficiently illustrated in peace practice, and yet practice should master them as much as possible.

It may be stated as the rule that no reports from the firing line can reach the station of the leader (who will probably be with the reserve); yet that will be most necessary when the action approaches superiority of fire. Orders from above to those below will, as a rule, have to be transmitted through regular channels, and reports going in the opposite direction will have to do the same; in either case, with the greatest possible rapidity. From this follows the importance of superior direction for combined action as a natural sequence. This indispensable system of orders, reports, and communications should be adapted to the circumstances and regulated so far as possible in each case. It is not true that any measure not based on personal observation is ordered too late. It may, and in many cases it will, be too late to give orders; for that very good reason, the Regulations make the decision of important steps one of the powers of the subordinate leaders who are nearest to the enemy, and not one jot should be taken away from that power. On the other hand, the range of the superior leader's view should be supplemented and perfected by every possible means on the part of the fighting troops, which alone

will enable him to form a correct opinion. It is plain that some tactical boundary is indispensable for the purpose; that boundary lies within the brigade. The latter forms a clarifying station, so to speak, and should therefore be provided with sufficient mounted organs for communication with the flanks and with the superiors. This method might generally be found practicable, and it points out the great importance of the brigade commander's position.

All reports sent by dismounted men will arrive too late; so says theory. But the actual battle-field permits much, just as it forbids much, that can hardly be settled in time of peace. In many cases a kind of "foot relays" might be established between battalion and brigade leaders, but only when the situation calls for it. It will be found more or less practicable wherever delaying action is required. How many reports might not have been sent from the right and left wings and from the center during the long delays on the 18th of August! How many were rendered? Were not all the superior leaders near the Mancee ravine kept in unbroken ignorance of the actual state of the battle, though their station permitted a good view? And would not many things have gone better had there been no such lack of information? In every command, therefore, the transmission of orders and reports, even during battle, should be most carefully systematized. This requires the employment of well-mounted officers and general staff officers for purposes of observation, with specific orders to send reports as soon as possible; they would choose their stations according to the state of the action, and report everything of importance by means of mounted orderlies while continuing their observations. Comparatively safe posts of observation are not lacking on the modern battle-field, as demonstrated by the events in the center and on the right at Gravelotte, even

at St. Privat—Montois; the flanks of the enemy's position should, however, first be ascertained. Appropriate organization of the system of orders and reports in battle is therefore more necessary than ever, and should be carefully taught in peace. Protracted and fluctuating fire-fights will probably not be absent in the future, since the improvements in fire-arms have rather added to than diminished the stubbornness of the fire-fight. That, it is presumed, will hold good with our present rifles, when in the hands of good infantry, of course.

It is a fact that since the wars of 1870-71 and 1877-78, all continental armies of Europe have changed and diminished the terms of service, particularly in the infantry, while, on the other hand, the number of foot troops has been greatly increased. It may be safely said that a longer term of service makes a better infantry soldier than a shorter one, hence certain consequences flowing from the reduction of the term of service will have to be reckoned with in the tactics of the battle-field. The infantry of the Imperial French Army was certainly one of the best that has ever existed, but it failed in the selection of its tactics and lacked many incentives peculiar to the German infantry. Yet it remains a matter of doubt whether any French infantry will ever equal that which fought at Wörth and Gravelotte. I do not believe that it will. To a certain degree, the same may be said of any other infantry of to-day, yet the demands made on it have certainly not been diminished. There is bound to be more disorder and skulking than heretofore, and there is perhaps but one effective remedy for the evil—*i. e.*, more and efficient leaders in all subaltern grades and some special organization in rear of the line of battle for dealing with skulkers. Can it be done? The latter perhaps, the former—well, we'll wait and see. Hu-

man nature will not be denied, and the evil will affect both sides; one reason more why everything should be done to have a good system of supervision.

The mass-battle will require an enormous net of organs for the transmission of orders, communications, and reports, well organized, well trained, covering the battle-field, extending beyond the flanks, and operating laterally and transversely on the principles of the relay service. On that basis the strength of the staffs should be calculated and that of the intermediate links and posts fixed, dependent on the distances and on the presumable importance of each point on the entire line. This is still more important in the case of battles of several days' duration, nor can the force of this consideration be impaired or broken by the idea that hereafter battles can be arranged from the strategic point of view alone, and that the tactical execution should be left to the judgment of the army. It is not permissible that the central direction should be kept in ignorance of the progress of the battle for hours, and that the armies should be without communication with the central direction for an equal space of time, as was the case at Gravelotte.

At any rate, in view of the modern armament and condition of infantry and in view of the uncertainties inseparable therefrom, more consideration is to be given to the sufficiency of infantry reserves, if the command of the army is to retain a firm footing. So far-reaching is the effect of improved armament in combination with shortened terms of service.

The defender occupying prepared positions—and more, perhaps, when the position is yet to be prepared—is going to weigh the advantages to be derived from advanced positions, and it is not at all improbable that they may play a much greater rôle in the future than they have in the past. This

is solely due to modern infantry and artillery fire in combination with the diminished tactical value of cavalry. The attacker on his part must at this stage seek the best method of reconnaissance and attack. It is of no use to appeal to experience and principle; the question cannot be solved in that way; it may at best be cleared up to a certain extent by peace maneuvers planned with that object in view. That should be done. It will then be found that movements of large bodies must be made at night, that much shifting and even changes of front become necessary; all arms must therefore be well trained in this particular.

Many new or modified questions will therefore confront the tactician which his experience will be insufficient to solve. They should therefore be amplified and supplemented by reflection without losing sight of reality—*i. e.*, we must have a healthy theory of fighting, and that in peace time.

The infantry was compelled to change its tactical forms and to put up with many additional evils inseparable from these modifications, though it did not have to change any of its principles; whereas the artillery had yet to establish some of its principles, before the two could become coördinate sister arms. In their common action infantry has the more difficult task to perform; that of the artillery, in fighting, being facilitated by the technique and better chances to carry out its principles. Infantry is unable to escape complete dissolution, and is, in the end, restricted to skirmish fire, but it remains a tactical arm, notwithstanding its state of dissolution. The artillery is called the solid framework of the battle, but the frame must be subdivided into small sections, whereby alone it is enabled to preserve the requisite order and solidity, and to become pliable, dirigible, and highly effective. Formerly in infantry firing it was not

the man who fired, but the officer who permitted him to fire. To-day infantry fire can be controlled only by careful training of the skirmisher by fire discipline, and artillery fire only by careful training of the battery. Individualizing the skirmishers and training the battery as a tactical fundamental firing machine constitute the best means for the action of each arm and for their combined action. Artillery had to follow in the train of tactics in so far as small units with considerable freedom and entrusted to many but sufficiently trained hands were substituted for large units in large combinations. In the pursuit of new principles, the artillery aimed for a long time at the direction and control of concentrated masses, but practice has shown their impossibility; in the artillery, too, there remains to-day only mass-effect by means of individual effect, direction of masses by means of individual direction.

During all the phases of the conflict up to the decision it is no longer correct to speak of infantry as the principal arm, as compared with artillery. In every action of any extent the two arms are interdependent, both must steadfastly aim at the one object—to gain a superiority of fire over the enemy, because that is the prerequisite for all further action. During this, probably the most sanguinary and protracted period, the artillery may here, the infantry there, temporarily prove more effective than the sister arm, but the accomplishment of the common object calls for the earliest possible employment of the full force of fire of both. I am aware that I shall raise opposition by no longer making any tactical distinction between infantry and artillery as the principal and auxiliary arms, as first and second arms of the battle-field, and this breaking with tradition may provoke a new controversy, which, far from fearing, I earnestly desire.

In the case of either arm superiority of fire presupposes direction of fire, and the measure of effect produced depends on the quality of the rifle and gun, on the number of both, and on the proficiency in firing. I deem it an indisputable truth that artillery fire is more easily directed than infantry fire, because, in the first place, the former is effective at greater distances than infantry fire, and because artillery fire admits of more deliberation and better observation. Under certain conditions the fire of the artillery is moreover more effective than that of infantry; either arm should therefore supplement the other tactically in view of their object: they always belong together.

To be sure, my ideas presuppose many things, particularly as regards artillery and the training of the leaders, which still have to materialize or are to be improved. Every artillery man should be able to *hit*; during the fire the piece must as much as possible be kept ready to fire, and when that is accomplished, the question of rapid-firing guns receives its best solution, depending as it does not on the construction of the barrel, but on that of the carriage (brake-apparatus). The proper foundation for the direction of fire is obtained only when, in addition, the organization of the artillery and the construction of the piece guarantee the tactically highest possible efficiency (masses of hits). That would require the artillery to be assigned by regiments to the divisions, the corps artillery to be abolished, and the number of batteries in the regiment and the number of guns in the battery to be diminished. How far the reduction should be carried is not to be inquired into here; it suffices to state that the present units are too large. Artillery acts by batteries, and the smaller the units the better will be the direction of fire, provided the artillery has learned how to hit. Divisional artillery should be so incorporated with

the division that infantry and artillery become completely blended tactically; that the last gun is in position by the time the infantry of the division is ready for battle; that the infantry is familiar with the effect of artillery fire, and the artillery with the effect of infantry fire; and, above all, that every general, irrespective of his arm (cavalry included), is thoroughly at home in the fundamental fighting principles of the two fire-branches of the service. Why should it be more difficult for an infantry general to observe and judge artillery fire than infantry fire, when the artillery has become proficient in firing by batteries and by brigade divisions (*Abtheilungen*)? There is no reason whatever; it will be necessary, to be sure, to train officers from the beginning to familiarize themselves with the characteristics and with the spirit of all arms, and to learn how to judge them. A general of infantry, cavalry, or artillery is sheer nonsense: we need but one general, who, to be sure, should be able keep his seat in all saddles.

The controversy as to the principal arm is therefore an idle one; in many of the phases at Wörth, Vionville, and Gravelotte we saw artillery play the rôle of the *principal arm*, and no decision will ever be gained without the fullest employment of artillery fire. Judging from the peace maneuvers, it would appear that the superior commanders do not by any means invariably display the requisite knowledge of the capacity of artillery fire; otherwise many things would not happen. Artillery will have to exercise special care in order not to be engulfed in catastrophe at the hands of the enemy's artillery and infantry. With artillery, therefore, everything depends on coming into position as quickly, as skillfully, and in as great strength as possible, and on anticipating the enemy's artillery in *getting the range*. If it accomplishes that, artillery with its present projectiles will

in many cases also play a decisive rôle against infantry. There can be no doubt as to this. If artillery does not attain this, infantry fire alone may lay it low by ranks, and we may in the future read not of "a battery of the dead," but of entire brigade divisions. This power and weakness of artillery should be familiar to the leaders of all arms; artillery should not deceive itself on that point, and should learn three things in peace: first, circumspection and judgment; second, hitting; and third, how to develop its full power of fire—in other words, how to get the range more quickly than the opposing artillery. It appeared necessary to me at this point to emphasize this vital question of modern artillery; on the other hand, it should not be forgotten that thoughtless action may reduce the tactical life of the best infantry to a minimum.

It is not merely the improved gun and the improved projectile that have been instrumental in the great ascendancy of the artillery; the same is due rather to the transmutation incident to the course of instruction in their uses—*i. e.*, the tactical training of the *personnel*. The progress of other armies has been similar to that of Germany, and every officer should be cognizant of the fact, in order that he may place an approximately correct estimate on the opponent and enter on the battle-field with a certain amount of preparation. The changes in the *tactical* training of artillery—in Germany, at least—have been more important and far-reaching than in any other arm. Up to a comparatively recent time we could speak of the German artillery as a "technical" arm, and it is in keeping with the truth to state that it entered the War of 1870-71 trained in this limited sense. Considering that the effect of that "technical" artillery was frequently very great, how will it be in the future, when superior construction is combined with progress in

tactics such as but few prophets of the future would have dreamed of in 1870-71? But they were there! It took them some time to reach places of influence. The separate training of the artillery, the course in firing at the firing school instead of on the benches of the artillery and engineer school, the detail of officers of the furloughed class to the firing school, the entire system of training (which we will not explain here) for imparting technical proficiency in the art of shooting, the tactical exercises and tactical firing exercises on the terrain, the organized combination of infantry and artillery, the principles of reconnaissance and of coming into position, and the observation and direction of fire as developed in the course of practice, these and other matters which I do not care to make public, prove that, based on healthy and tried principles, artillery has at last—it took a long time—worked itself up into a tactical arm as to which all former tactical conceptions are antiquated. And if ever, it is in the future that ignorance on the battlefield will be paid for with rivers of blood.

Infantry and artillery are the decisive arms on the field of battle, and intelligent coöperation is required on the part of both. This applies equally to the foot artillery, because the greater efficiency of the gun is going to compel the defender to construct considerable artificial cover, which field artillery will not always be able to destroy, especially where there has been plenty of time to prepare the position. For this reason armies will carry guns of heavier calibers with them in the field, whose effect should be fully known by the higher leaders at least. Here we encounter a new factor in tactics, which extends to the preparation (defense) and attack of artificial positions. The side which recognizes its inferiority in strength will endeavor to strengthen its power of resistance by artificial cover. Any body of troops and

any army may find itself placed in the rôle of the inferior (defender); hence the superior leaders should be familiar with the principles of the construction of entrenchments and the troops with those of their execution. That is the reason why in the future the use of the spade may under certain circumstances be of eminent importance, and the recognition of this fact has in all armies brought forth special instructions under which leaders and troops are trained in time of peace for these additional tasks on the field of battle. Every officer should be as familiar with the instructions for field fortifications of April 6, 1893, as with the Field Service Regulations, the Drill Regulations, and the Firing Instructions. Together they constitute the tactical gospel: every one should know how to read and apply them as he would the gospel. These Regulations constitute parts of a whole, they show how intimately artillery and infantry have to coöperate, and that they are the real arms of the battle-field requiring for the tactical act enlarged services from the pioneers, as compared with former times. That the pioneers have thereby gained in importance need not be specifically stated. From all this it would appear that large, artificially strengthened positions that *must* be attacked are to be reckoned with in the future.

Though in the future the principal arm of the cavalry will be the horse, as it has been in the past, I remain opposed to the arming of all the cavalry with the lance. The more active national spirit in combination with universal liability to service are bound to give any future war the character of a national war to a greater extent than was the case, for instance, on the Loire in 1870-71. It is true that under the recruiting laws every able-bodied man is employed in organized bodies up to his fortieth year. But in a national war even the cripple is a soldier *fit ad hoc*, and

the enthusiasm, miseries of the war, and governmental measures will no doubt compel those men who have completed their legal term of service to take up arms also. The employment of the cavalry in front of the army, in the tactical sense—one should call to mind the conditions on the Loire during the last third of November, 1870—will be beset by extraordinary difficulties; the lance may become an inconvenient burden, whose bearer feels inclined to discard it. I have seen such things myself in 1870-71. Having to pay more attention to the lance than to the enemy, the horseman when on patrol is the more apt to find himself at a disadvantage, as with the cavalry everything passes off quickly; in short, I deem the lance superfluous and even harmful for cavalry on reconnaissance. Nor does war experience award to the lance the superiority in the charge. The Prussian 1st Guard Dragoons brilliantly defeated the Austrian Alexander Uhlaus at Königgrätz. Still I would approve of the retention of the lance for a certain number of regiments—for instance, for the medium and heavy cavalry; but for light cavalry saber and carbine are sufficient. All regiments should retain the carbine, while I would not hesitate to discard the saber of the lancers. If in addition to the horse, cavalry needs one common arm, it certainly is the carbine. The correctness of this would become at once apparent in the operative employment of cavalry, which, however, I do not desire to discuss here. Even in tactical reconnaissance it will be found good to supplement cavalry with artillery and infantry as soon as it enters highly cultivated country. That bold galloping about of patrols, so misleading in peace, will then cease, and many things observed and reported by patrols in peace will not be observed and reported in war. During the national war in 1870-71, the cavalry, despite its best efforts, proved unequal to its task in

reconnaissance on a large scale; what little information was gathered, was elicited by a few gun-shots or by deployment of some infantry. As phenomena, such as observed on the Loire, will hereafter be the rule, they should be constantly kept in mind in order to give the cavalry an appropriate armament; nor should great expectations be entertained even then. This point seems to have been lost sight of in peace to an alarming degree, yet it is certain that nowhere will we suffer more disappointments than in the field of strategical and tactical reconnaissance by cavalry. The higher leaders will be more frequently placed in a state of relative perplexity than formerly, and in order to learn anything at all, they will be compelled to engage with all three arms. It is not to be thought for a moment that such demands will be made during the operations only; no, modern tactical reconnaissance, particularly before the decisive battle, calls for them imperiously, nor can theory foretell what measures are most likely to lead to success. It is my conviction that here there is ground for serious reflections, inquiries, and experiments far from simple in character, and that to comply with the enlarged principles the means now at hand must be largely supplemented.

Great differences of armament, training, organization, and employment of the various arms and battle units (divisions) do not now exist among the large armies, and the same may be said of their tactics; in numbers they are likewise about equal, and there are two points only on which superiority—which cannot be accurately calculated in advance—may be gained, and those are tactical training and moral education. Both should be brought to the highest perfection.

The third rôle on the battle-field falls to the cavalry. As tactics stand to-day, cavalry on the battle-field, as com-

pared with the other two arms, is an auxiliary arm, and cannot be the principal arm except after the decision or before the battle. This is due to the complete revolution of the conditions, especially to the changed numerical proportion between cavalry and infantry, in connection with the large total increase of the armies. To be sure, at Vionville—Mars-la-Tour, on the 16th of August, 1870, cavalry played a prominent rôle on the battle-field, but the case has remained the exception. Neither in the war against France nor in the Turco-Russian War has there been a repetition. Moreover the enemy's action at Vionville was of no small assistance to our cavalry; while, on the other hand, the French cavalry, for instance, despite its sacrifices, never exercised a notable influence on the course of a battle, either at Wörth or Sedan. Nor did the cavalry bring about a decision at Vionville, and it will not be able to do so in the future; still it is the duty of cavalry, as it was in the past, to attack *where there is prospect of adequate success*. As fire-arms command wider zones than formerly, as rapidity of fire has been largely increased, both of which can never be counterbalanced by greater speed on the part of the cavalry, and as smoke has been suppressed, the tactical employment of cavalry has become more restricted and its leading more difficult. There will nevertheless be cases on the battle-field and up to the very decision of the battle where an enterprising and efficient cavalry will find tempting objectives for attack; these objectives should then be charged under all circumstances. This will particularly apply to silenced artillery and repulsed infantry. Here the increased power of the fire-arms fails to nullify the law of velocity, especially after the decision. The battle of the future is bound to mature scenes of which even the liveliest imagination cannot gain a sufficient conception: infantry morally spent to the degree of

mental irresponsibility, and without ammunition; "batteries of the dead" incapable of movement; flags and colors, if taken along, in profusion. The point therefore is to increase the enterprise of the leaders, and to sharpen their tactical judgment. The cavalry leader must track his quarry with the patience of the eagle and seize and carry it off with the same resoluteness. In this manner cavalry may render the decision more decisive on and immediately in rear of the battle-field, render the opponent impotent, and enhance his discomfiture to an unsuspected degree. Human nature never changes! Its moral failings and defects can be turned to account only by the speed of the cavalry.

It goes without saying that in addition cavalry should possess a certain degree of skill in dismounted fighting and should be able to attack in any strength and in any formation. Whatever any arm is expected to know in war, it should diligently practice in peace. For this reason I deem the practice of the mass-attacks as important for cavalry as the practice of fighting in masses of skirmishers on the part of infantry, and field-firing for artillery in terrain that is as little known as possible.

It is not my intention to write an outline of tactics; with due consideration for the effect of modern arms, I shall cite various events from military history in order to deduce therefrom tactical principles and forms, such as will promise success under fire.

For no theory will ever lead to correct conclusions unless based on practice and military history.

The Drill Regulations for the infantry of September 1, 1888 (Reprint of 1889), for the artillery of June 27, 1892, for the foot artillery of March 14, 1889, and for the cavalry (provisional) of 1893 are the tactical sediments of war experience, but the consequences which will follow from smoke-

less powder, from the small-caliber rifle, and from the greatly increased fire-effect of the artillery, for the *training and leading of troops*, for *theoretical and applied tactics*, are by no means fully and accurately determined. Detailed discussions would therefore be of some benefit, even if nothing more than a greater incentive to reflection were gained.

In order to overcome the probably very great losses to be expected in the future, much has been written for nearly twenty years about the importance of night battles, and there are "tacticians" who seek to gain by the aid of darkness what they do not dare to undertake in daylight. Under certain circumstances comparatively great results, within certain limits, may be gained by night *actions*, but *night battles* are out of the question, and it is battles alone that decide wars. Why then this tarrying over irrelevant matters?

For the same reason the so-called "ravine theory," a parasitic outgrowth of the "task system," has of late found many advocates. Aside from the fact that the requisite ravines are not likely to be at hand, their use would in most cases bring about a deployment near the limits of short-range fire, exactly the thing we want to avoid—viz., great losses without opportunity to combat the enemy up to that moment and without prospect of gaining the superiority thereafter.

Others propose to throw the open lines in single rank upon the enemy without stop, closely followed by all the rear echelons, straight across country in the previously determined direction of attack, and to within the limits of short range, either in double time or at a run, and to advance thence by rushes; others propose to creep up, with pauses, after the medium range has been reached; again, others

suggest traversing the middle and short ranges by means of rushes not exceeding 30 paces, etc.

These suggestions should neither be found fault with nor characterized as wrong and useless. Tactical disadvantages would not accrue from them unless one of these "methods of fighting" were incorporated in the Regulations. Cases might easily enough occur where, dependent on the terrain, the fire, and the task, this tactical "sample case" might have to be drawn upon by some organization. Freedom must be preserved to the subordinate leaders, if for no other reason than that any other mode would be incompatible with the nature of the combat of masses of skirmishers. At some time, however, the moment must arrive when variety will be entirely or almost entirely supplanted by uniformity—namely, under short-range fire. Yet even in spaces of 600 meters, some cover will frequently be available. However that may be, good infantry to-day must be able to push forward, creeping, running, rushing, etc., and it must be instructed accordingly. That relative simultaneity is thereby destroyed is of no consequence; it is not needed until the final rush, but then we must have it.

The armor shields and armored clothing prepared by the Danes and others do not seem suitable for field service as protection against projectiles; but, on the other hand, the construction of rifle-trenches, etc., by means of the spade will play a great rôle in future battles; occasions for their use will arise for the attacker as well as for the defender, since it is very probable that there will be battles of several days' duration—which are nothing new, however. In this connection it is sufficient to recall the North American Civil War.

In tactics we find certain forms and principles restricted to longer or shorter periods. In the history of the tactics

of antiquity and of the middle ages these periods comprise centuries; since the invention of gunpowder they have become shorter; and since the appearance of the breech-loader in 1864, tactical forms and regulations have been and are subject to constant change.

Tactical changes are chiefly brought about by the armament; what never changes is *man*.

It is well known that it is a law of Nature that when two or more persons are contending for victory, they study each other's means of fighting, and that as soon as either party recognizes the superiority of the other's methods, it will adopt them in order to overcome the enemy by his own methods.

Thus the Prussian company column, for instance, may to-day be found in all armies; thus the swarm of skirmishers has everywhere become the principal fighting form of infantry and skirmish fire the principal kind of fire, and in all these important questions the German infantry has led the other armies. To be sure, the War of 1870-71 did not find the German infantry at the height of the tactical application of these principles, so that—and also because it had to confront *unprepared* a very much superior rifle—it had not yet deduced the correct conclusions for the attack; still, after the battles in August, the German infantry discovered more suitable forms and applied them without difficulty.

The tactical combination of movement and fire-effect, to whose highest possible development the Great Frederick had devoted a lifetime, has been occupying the tacticians ever since the reign of the breech-loader was inaugurated.

But the times have changed and more perfect are the weapons. While the Great King could lead forward his closed lines in the cadenced step, while he was not compelled to halt them, make them lie down, rise and resume

the advance, etc., before he poured an enormous fire on the enemy and broke into his physically and morally shattered ranks, without himself suffering great losses at long range—to-day hundreds fall under the bullets of an enemy that can barely be discerned and who can be fought only with difficulty; in these times the act of battle, moreover, lasts much longer.

Destructive infantry fire sweeps the ground for 1500 meters, and the question culminates in how to traverse it with the greatest safety, and how to reach a distance from the enemy whence he may be subjected to, and shaken by, a sustained and effective fire without having one's own fighting strength reduced below the required degree. Looked at from the theoretical standpoint, the excellent fire-arms of to-day favor more especially the defender during the conflict; still a close examination, which we shall make below, will point out many advantages for the attacker. In a purely frontal affair the attack and defense can array an equal number of men side by side, but on the part of the defender more men are able to fire at the same time because he is deployed for firing, perhaps in several lines, while the attacker is again and again prevented by losses from gaining the same development of fire for which he is striving. The occurrences at Point du Jour show that mere numerical superiority of the attacker will not necessarily give him either frontal equality of fire or frontal superiority of fire. The attacker must approach to within a certain distance and expose himself, cover not being always available; this is not required of the defender, but if he does expose himself, it will be at moments when the attacker is shaken and is less to be feared. From the sweeping fire at long distances and from the enormous force of penetration of small-caliber projectiles arises the necessity to preserve one's own forces as

much as possible in order to enable them to act at all. Tactics are expected to furnish the means thereto.

It is plain that in clear weather the use of the ground will play a more important part than heretofore, even before the deployment. It will receive increased attention during the march to the place of deployment and the advance guard will find frequent use for good field-glasses. Both requirements involve danger. The use of the ground must not be allowed to degenerate into a game of hide-and-seek, which, aside from other disadvantages, will dull the sharp edge of the attack which undeniably signalized the German infantry, whatever may have been its shortcomings. We do not mean here a reckless rushing in, but the deliberate expression of the will, particularly on the part of the subordinate leaders, always, of course, preserving unity of action. Any infantry is therefore apt to find itself in position where it must expose itself, if only while rushing from cover to cover. The entire execution of the combat must be characterized by vigor. In comparing the fighting methods of former and present times, it will be found that much of the vigor has been lost and that diffident groping is noticeable, which is not justified by the new arms. The necessity under which the attacker will frequently find himself, of opening fire at the medium ranges, impresses on modern fighting methods the stamp of slowness. If that necessity should be still greater in practice, it is all the more reason for doing everything to sustain the tactical offensive spirit by all available means. Therefore, there must be correct and quick use of the ground; the forward impulse must be the inherent, elementary force of the troops; but the task system pure and simple, as frequently practiced, does not invariably support that tactical principle, and herein I find one of

its chief disadvantages—viz., the stunting of the vigor of the infantry combat.

The use of field-glasses shuts out a general view and favors the perception of details. This is not an inherent property of the instrument; its use should be learned like that of a weapon, and one should be expert in scrutinizing cover, from the mere furrow to the declivity and to the edge of the woods; but such general survey with the bare eye as his station and command may call for should not be neglected by the commander. It seems proper to point this out on account of some events that have occurred.

It is the duty of strategy to see to it that when fighting is to take place, it be done in the most effective direction, and with the greatest possible superiority of force. Strategy therefore demands an unfailing eye to every phase of the situation as regards the calculation of all factors of time, space, *matériel*, and politics, and the utilization of all means of communication. All strategists have been industrious workers, good calculators, and have possessed a good knowledge of the theaters of war and of military history and an understanding for whatever may be of any advantage in obtaining numerical superiority within a certain space and time. For that reason strategists have at the same time been men of science and, so to speak, men of a system or method—*i. e.*, of that peculiar to their own genius. Whoever desires to *direct* a large army must *himself* have calculated and proved everything that has any bearing on the leading of masses. In that task assistants (general staff officers) are indispensable to the strategist; and they may do the preparatory work, but its examination and the final arrangements are the duty of *the chief of the general staff*.

The large modern armies require even in peace a *great deal* of preliminary work, arrangements, and provisions of

all kinds. Strategy is organized for so many set cases with their special requirements, the rôles are assigned, and more than ever has strategy become a *science*, and more than ever is it exposed to the danger of maturing a bureaucratic monster of many interacting wheels and of educating and training *bureau chiefs instead of general staff officers*. In that enormous machine each individual occupies a certain place, and for each one there is a reserve of three or four officers, for the same place, the same duty, the same track. If one of them is transferred to another place, things do not go well at first, because he cannot know everything; the "Russian" is not familiar with the duties of the "Frenchman," while either may be more familiar with these foreign armies than with his own. The undisturbed action of such a stupendous wheelwork requires a *diligent and ingenious mind*, a man who, so to speak, has impressed on his mind the outline of any possible contingency in war.

That characteristic is to-day more or less peculiar to all general staffs; to deny it would be foolish. If the *generals* are there to lead the armies, etc., then a bureau chief may suffice for a staff officer. Napoleon I. himself had at first but a simpleton! But if the generals are not there, which in view of human mediocrity in every field may perhaps be the normal condition, the failure to cultivate military history to the requisite degree would exact heavy penalties. Properly cultivated, it may be instrumental in time of peace in preventing the individual from becoming, as he would under existing conditions, a pedantic bureau chief, instead of a fresh and active general staff officer schooled in military history, and it would be most salutary if no officer were admitted to the general staff of the army unless he had been on duty in the section for military history. No one who is fond of military history, who is gifted with imagination, and

who appreciates what may be learned by means of both, will ever become a bureaucrat; he may not be the best chief of bureau, but a more efficient and useful general staff officer; his fondness for military history is not diminished, for it grows after a taste for it has once been acquired. The masses of the future, to be sure, will not admit of such masterly performances as those of Napoleon in February, 1814. They will require the simplest of plans to keep one army from crowding and crushing the other, and it is only in case unpleasant incidents should throw the giant polypus of a modern army from its familiar track, that the dark sides of the general staff bureaucracy as now reigning in all countries would come to light.

This bureaucracy has been favored, sad to say, in other respects also. Formerly the general staff officer was required to command a company for about three years and a battalion for two years, and remained sufficiently in touch with the needs of the troops, with all phases of practical service, with the life in the line, and—with tactics! Recently the above periods have in most cases been reduced to one year, and what interest can an officer take in his troops under such circumstances, when he knows “in a year I shall be rid of this duty and be back in my bureau”? He has purely personal interests, and, as a rule, those of the troops will suffer. A company that has been commanded by such officers for two or three years is bound to lack the requisite solidity of interior structure. Moreover, in several instances officers of these grades were not returned to practical service at all, and, what is worse, some seem to consider it unnecessary! Since the war academy has been placed under the general staff, the graduates of the institution consider themselves at once candidates for the general staff, and they continue to lead a bureaucratic life from a

comparatively young age, while none should be allowed to become a major in the general staff unless he has taken one contingent of men through their entire term of service. In this manner an officer learns the needs of the troops, and that is exactly what every general staff officer must *know*. But, good heavens! he has hardly joined the troops, when he is "missed" in the machine of the general staff because with new hands things do not run smoothly; and he is recalled prematurely through concern for that "machine constantly kept under steam." Hence the growing preponderance of the *bureaucratic* part of this occupation (which unfortunately, can no longer be avoided), over the active part.

The service of the general staffs attached to the troops has likewise become more bureaucratic, the documents to be prepared grow with every year, and the general staff officer is preëminently a bureau chief. The work in preparation for and during the manœuvres, general staff journeys, and other exercises are not a sufficient diversion, and are almost wholly mechanical in character: though new in the first year, the conditions are the same in subsequent years, with the exception of a change of locality, and it cannot be gainsaid that in the discharge of such duties little *judgment* is required, and that with a modest measure of mechanical skill a satisfactory result can be accomplished. Like any one else, the general staff officer can sharpen his tactical judgment only by means of practical service, experience, and exercises, and he needs tactical judgment to-day more than ever before. A knowledge of the opponent's army and of its institutions, of the theaters of war, and the sifting of messages and reports and their preparation are not sufficient; the last kind of work appeals more particularly to the tactical judgment. To be sure, the fact that the gentlemen

of the railway section are bound to become bureaucrats springs from the very nature of "strategy organized in peace"; and there are many considerations and requirements that stand in the way of any extensive changes.

The War of 1870-71 demonstrates the enormous superiority of strategy over tactics. The superiority of strategy was so great that surprising results were gained in spite of mediocre tactics, so that, properly speaking, the Germans won through strategy. It should not be forgotten, however, that the moral qualities, the imponderables, were present on the German side to a high degree, and remained so. In future there will be little difference in the material value of armies, yet tactics will continue to level the path of strategy, and strategy will continue to receive its success at the hands of tactics. The tactical training of officers, those of the general staff included, should therefore be carried to the highest degree, since victory will require greater efforts than at Wörth and Gravelotte, better judgment, more skill in the moving of great concentrated masses, better coöperation of the masses, and uninterrupted communication. The masses placed in readiness by strategy will remain concentrated longer, their maintenance, feeding, and draining channels must be highly organized, and so-called "grand tactics"—viz., the moving of army corps and armies by brigades and divisions beyond the confines of the battle-field—are bound to become indispensable. These things must be mastered in time of peace, for the reconnaissance, especially of extensive positions, as at Gravelotte and on the Lisaine, will probably require more time and effort than formerly; to locate the enemy's flanks (before the completion of which task no battle order should ever be issued) will itself require a day, nor is this estimate considered too high in view of the circumstances of the 17th and 18th of August. Even then

much remains to complete a well-considered plan of battle. Granting this as probable, we shall invariably find ourselves compelled to have recourse to the Napoleonic principle of concentration before the battle, whenever an extensive prepared position is to be attacked, and the concentration will be one of masses exceeding those at Gravelotte; and we shall moreover have to learn how to move these masses from the place of preliminary to that of definite deployment.

Whether the measures for concentration, the system of orders, reports, messages, and reconnaissance during concentration, the modifications in the deployment rendered necessary by the results of the foregoing, the order for the battle and the conduct of the latter, be classified as strategical or tactical, they all must receive impulse and aim from supreme headquarters; the direction must be in one hand and be so organized that one hand is equal to the task. The station for the central direction should therefore be selected in accordance with the object of the battle, and the greatest care should be exercised to maintain uninterrupted communication with the cavalry divisions, army commanders, and army corps. The cavalry divisions may be so situated as to save time by making direct reports, and by sending merely a duplicate report to the army commanders. These reports will mostly contain the results of reconnaissances, and it may therefore happen that, dependent on the impression received from the sum total of all reports, a change of station may be deemed necessary for the central direction. Nor should the thread of communication between all higher commanders ever be allowed to break during the deployment for battle or during the battle itself. The perfection with which this system works alone guarantees direction.

It cannot now be prognosticated as to how far the cap-

tive balloon will meet the expectations placed upon it. I still consider it a capricious means of reconnaissance and report, inferior to the well-mounted, bold officer. More system is, however, required, and when that is had, it may be taken for granted that reports and orders will arrive in good time, more particularly so with the aid of the telegraph. I do not hesitate to say that the proper organization of the system of reports and orders is the most important feature of a "grand headquarters."* No one whose work is elsewhere should be tolerated there. It may be assumed that the principal battles will take place on a front of 18—20 kilometers. If the headquarters are on one of the flanks, either during the deployment or during the battle, orders and reports will arrive too late; if it is in the center, the time will in every instance be reduced by one-half. It should be noted, however, that the armament of cavalry and its employment in combination with artillery, perhaps in advanced positions, may prompt the central direction to effect the preliminary deployment at least 12 kilometers from the enemy's supposed position. The distances between the various headquarters are thus increased, and the central direction is here confronted with an arithmetical factor, whose reduction to a formula is not permissible, but which may be determined with fair strategic accuracy from experience and from the study of some battles. Modern organization of all higher headquarters, modern equipment of all, from the army corps upwards, with sufficient organs for the transmission of orders and reports, and habituating the various headquarters, by means of a well-considered scheme, to the most rapid and accurate possible rendering of reports to their superiors, to their inferiors, and to the flanks—these are requirements of the command which in

*German term for the headquarters of the commander of several armies.—*Tr.*

1870-71, for instance, were not sufficiently met. How such a scheme should be arranged and kept in operation will not be discussed here; reference to the conditions at Gravelotte and elsewhere will enable any one to answer the main question. So much is certain, however, that an army which is abreast of the requirements in this respect possesses a great advantage and the faculty to solve more difficult problems than those encountered by the Germans on the 17th and 18th of August. Whoever believes in a central direction should study this example, as it unquestionably contains all answers for the preparation and direction of the battle of masses in the future.

That battle will probably require more than one deployment was shown on the German side at Gravelotte, where the Germans made three different deployments: first along the road Rézonville—Mars-la-Tour on the 17th; on the 18th along the road Gravelotte—Caulre Ferme—Doncourt—Jarny; and lastly, along the road Gravelotte—Verneville—Ste. Marie-aux-Chênes—Auboué. To be sure, the reasons for these deployments must be sought in very different directions. The first deployment (at noon on the 17th) had for its object the continuation of the battle on that day, but, for reasons not to be discussed here, the battle was subsequently postponed to the 18th. The first deployment on the 18th was the result of the embarrassing uncertainty as to the enemy's whereabouts; the second deployment, including the direction of march given to the II. Corps, was the result of definite information as to the enemy's position. Though the reconnaissance on the 17th and 18th may be called anything but perfect, yet in future the task of locating the enemy's flanks will by no means be an easy one, even with better arrangements for this object. It will hardly be possible to avoid several deployments, increasing

in degree of completeness, and, indeed, here we have the sign-posts for the battle direction of the future, which is out of the question without a suitable deployment in keeping with the strategic intent. There are many reasons why in the future the development of the final deployment for battle from several preliminary deployments will be more difficult, accompanied, probably by constant fighting, perhaps by cavalry battles, while, moreover, the time required will be much greater. In each one of the preliminary deployments the armies will therefore have to observe suitable distances and intervals to make them capable of sudden and immediate changes of position or front. I believe that here there is much that is new in the way of grand tactics, or whatever you may call it, since the advantages accruing to the defender in the selection of his position, from the adoption of smokeless powder, are so great that he will use every available means to deceive the attacker and lead him astray, since heretofore the means to that end were not at his disposal, and since, dependent on his successful employment of ruses before the battle, the defender will gain advantages for maneuvering and moving his masses which may give him the superiority and even the battle. It is only now that the active operative-tactical defense has become fully practicable, and why should not a leader arise who knows how to draw from the sum of these changes all their inherent advantages?

It follows that in such situations the headquarters will in future have to remain within the zone of each deployment, and that smokeless powder affects in a high degree even the formulation of decisions on the part of the central direction, since all spaces are enlarged, all times extended, and all problems before the battle rendered more difficult.

It also follows that the general staff officer in particular should possess a correct tactical eye, which can be acquired by practice only. In most cases it may be possible to infer the general direction of the enemy's position from strategic considerations, aims, and principles; still, the examples of Königgrätz, Gravelotte, the Lisaine, and Orléans show how easy it was in the past to be deceived as to the details of the direction and as to the whereabouts of the enemy's main body. Misapprehension on the part of the higher leaders and the resulting *doubt* are greatly favored by the new arms.

It is, no doubt, to be ascribed to the German system that the tactical capabilities were not equal to the strategic; under that system general staff officers were almost the only ones to reach high command, and the tactical school, on the other hand, only produced men skilled in detachment tactics. The necessary connecting link in the chain of command, brigade and division commanders firm in every saddle, was wanting; hence in the battles of 1870-71 we have detachment tactics, instead of battle tactics proper. Though detachment tactics may have sufficed, thanks to a very superior strategy, we cannot count on the return of such favorable conditions, and the more imperiously do tactics command that we learn how to fight in large bodies, that we discover the tactics of the battle-masses.

Though strategic discussion has no place in this book, I cannot omit touching upon one general matter connected with the assembly before battle. Moltke's dictum, "March divided, fight united," has, through Moltke's genius, and in the period of *his* strategy, matured the highest triumphs since war has been waged. To dispute this would be to deny facts. But if Moltke were still alive, I am convinced that the changes which have since occurred, and which cannot be ignored by strategy, would have prompted him to

modify, and perhaps to change his dictum into "March united and fight united." This is plainly foreshadowed by the operations around Metz. When standing by itself, however, the first quoted sentence is frequently misunderstood and erroneously interpreted. Troops will hereafter also be divided on the march, but not so long as heretofore; the concentration will take place earlier and part of the operative task will be solved with the troops concentrated—united. Above all, I would caution against the idea of a return of the magnificent strategy which Moltke's skill has accustomed us to connect with warfare. The general laws for planning and conducting operations will remain, but the operations will be slower, their several periods will require considerable time, and the results will probably be less decisive, whoever may be the victor. It is due to the masses that have to be set in motion and to the resistance offered by the enemy's masses in connection with defensively prepared districts, with fortresses, and with railroads. To be sure, the masses harbor within themselves their greatest enemy, and we must learn how to overcome him; there are many indications that the matter is being given due consideration in Germany. Take the equipment with tents, for instance. Whether it will succeed remains to be seen. Both opponents, however, will suffer from the same disadvantages, and it will simply be a question which of the two can better and longer preserve his armies, and thus gain numerical superiority. Subjugation will not be effected by battles alone; hunger will be a more efficient ally than it was in 1870-71.

It is radically wrong to believe that strategy extends only to the edge of the battle-field and that the latter is dominated by tactics alone. The two blend in the battle. Leaving aside a few fundamental principles, strategy is subject to modifications engendered by the progress of science

and civilization. It lies in the nature of strategy to utilize every improvement, and for that reason every general staff officer is, as regards science and that which may convey superiority, invariably a promoter of a healthy progress.

While strategy is subject to considerable modifications, constant change may be said to be the rule in tactics. Wise regulations should therefore leave a certain amount of freedom to the intellect; where such is not the case, every army ought to be provided with a printing establishment to furnish new regulations that would be abreast of the times. That is about the point we have reached, and it is due to the fact that we delayed our reforms far too long. Indeed, the omissions of two decades had to be made good in two years. With tactics it is frequently as it is with fortresses. Instead of working ahead and discovering the laws for, and the construction of, cover, the engineer as a rule provides for present requirements, indulges in all kinds of fancies, and loses himself in forms; and just as the fall of many a fortress may be extenuated by the fact that at the time of its completion it was already *out of date* and incapable of successful defense, because a destructive gun is more rapidly constructed than a fortress, so have armies been defeated which had neither the insight nor the strength to promptly relinquish their superannuated "tactics," or which *went astray* in seeking suitable tactics. And thus it will ever be. Yet there are also armies which have been badly beaten notwithstanding their timely regulations, but that was due to the fact that strategy was neglected for the benefit of tactics, that the strategic intellect was not sufficiently cultivated. This cultivation must go hand in hand with that of tactical judgment.

Strategy and tactics are both based on military history and military science, and both may be acquired to a high

degree. The method of application of what has been learned shows the gift of leading, talent, genius, master-mind of the individual. A correct school will therefore always consider strategy and tactics as inseparably connected domains and conform thereto in its work. In that sense all great leaders have acted, and they are the ones who from their early age have done an immense amount of intellectual work. If strategy is neglected, the individual will never rise to the level of the art; he will rather be moving in lower spheres, he will not learn to reflect on the nature, causes, and connection of the operations, and in the most favorable case he will not rise above the skilled mechanic. This has always exacted its penalties, and the disciples of Mars should therefore be *encouraged to take up the study of strategy*. His Majesty is not served with one strategist; he can not have enough of them. This should be preached from the house-tops; yet but a short while ago the very opposite was affirmed and—approved! Why are so many skilled tacticians useless as strategists? Why do such men not feel themselves at home in strategy? There are so many reasons for it that we do not care to enumerate them, and, unfortunately, we cannot say that they are being systematically counteracted. If, on the other hand, tactics is neglected, or if it goes astray, strategy will not have freedom of operation. It is the whole army that must be able to fight according to modern conditions; strategy relies on this being the case.

In tactics it should be kept in mind that the factors entering into the calculation are men, and that the psychological motives—some, at least, if not all of them—of the general, supposing them to be ideal, should find expression to the same extent in tactics—*i. e.*, in the individual man on the battle-field. Improved modern fire-arms also teach us

to estimate more highly the value of psychology in tactics than was formerly necessary, and for that reason the will-power of the individual soldier should be persistently and intelligently cultivated in order to mature in him, by means of the highest attainable cultivation of the will-power, the determination to be victorious under all circumstances. This very point is but too frequently neglected, and the experimenting in factitious forms soon degenerates into a veritable virtuosship. It is in the terrain alone that tactics acquires life and health. What formerly swayed the general alone or a limited circle around him—passion and ambition, thirst for honor and glory, enthusiasm for the object of the war—must to-day permeate the army in its entirety—sufficiently, at least, to rouse the individual's own impulses to a certain degree; and this store of moral force must be suitably guided and utilized by means of a rigorous discipline, as was that of the old Romans and that of the armies of Frederick the Great; otherwise the finest principles and forms remain devoid of vitality. Intelligence and habit, fear of punishment, and hope of reward no longer suffice to overcome the difficult situations in which the infantryman to-day is apt to find himself in any action where he means to be victorious. More is required: the soldier must make the general's cause his own, must carry within him the same fire, must be sensible of the same ardor, or he will not rise from behind the covering fold of ground to advance again in the face of the storm of bullets.

Wherever we may look, we see good ideas degenerate into drill-ground fancies. For the same reason the quondam echelons of the Great Frederick became the favorite tactical features in the hands of unwise men who failed to notice that a different era had long set in. And so it is in our days; we have gone from one extreme to the other, we

have lost the logical connection: "*La recherche de la paternité est interdite*," and a system is advocated which accords no place to the action of the higher leaders.

Hordes we must have, but we must also have definite principles for their fighting.

Besides certain precepts, the system of hordes of skirmishers also assumes that the soldier has been trained to self-activity from the start, to the development of all his moral and intellectual faculties and attributes, in order that the sense of honor and of duty may actuate him whenever he is no longer under the constraint of form or under the eye of the leader. It should never be forgotten, however, that human nature is frail, and that the soldier should be acted upon directly and immediately by personal example wherever it can reasonably be done.

In the past few wars the tactics of the opponents differed widely on account of the inequality of armament and on account of the difference and lack of understanding of the principles and organization of the opponent; in no case were the tactics in keeping with the spirit of the armament.

Certain it is: First, the armament of the infantry of the attacker (Germans and Russians) was, on the average, inferior. Both suffered some extraordinary losses against the better armed defender.

Second, the losses began to be felt at a distance, where the opponent was unable (*i. e.*, where his weapon did not permit) to answer the fire effectively.

In the Prusso-German campaign there were several instances which invite reflection, and which, if properly judged by the facts, ought to lead to proper deductions.

In that work such officers alone could take a useful part as were present at the events, observed themselves, others, and the opponents, and were in a position affording an ex-

tensive survey; they should, however, closely follow all improvements of armament, so as not to teach things that are out of date.

This book is intended to be military-historical, psychological, and tactical.

For whoever has watched actual battle and the recent technical improvements, and who has also considered the growth of the national sentiment and of the military spirit in France and Russia, is bound to examine the tactics of the future under these three headings.

PART I.

MILITARY-HISTORICAL STUDIES.

1. *The Attack of the 28th Infantry Brigade on the Farmstead of Bor and on the Adjoining Entrenched Wood of Briz in the Battle of Königgrätz on July 3, 1866.*

(a) *The March.*—On the 3d of July, 1866, the 28th Brigade had completed its deployment to the northwest of the ridge of Popowitz by 2 p. m. From our previous position near Alt-Nechanitz on the right bank of the Bistritz we had been able to observe the course of the battle as far as Lipa; here we were as though shut off from the world. We saw nothing and could not be seen. The short march from Nechanitz had taken the brigade *over an hour*, because, while the infantry was crossing the Bistritz by the repaired narrow bridge, General von Hiller, who was on the further bank, received orders to halt and to let the reserve artillery pass.* As the bridge was too narrow for two columns abreast, the 28th Brigade halted where it was. To send the artillery to the front to prepare the attack was perfectly correct.

After Alt-Nechanitz had been *taken*, F.—28th† followed the Saxons by order of General von Schöler, marching straight for the bridge. The latter was in flames and we were in a dilemma. F.—27th, with commendable devo-

*Statement of General von Hiller, February 10, 1890.

†Means Fusilier Battalion of the 28th Regiment. See author's footnote, page 67.—*Tr.*

tion, crossed the Bistritz farther to the left with the water up to their shoulders, but the main question was to save the bridge for the passage of the main body. To accomplish that was the *chief problem*, and to show how in need small means, when well organized, may accomplish great things, I will briefly state what happened. F.—28th unstrapped their mess-tins, and, after the manner in which formerly fires used to be fought in the country district where the regiment is recruited, formed two lines, which the other men kept supplied with mess-tins filled with water from the Bistritz.* In this way the small means at hand permitted great masses of water to be poured on the burning bridge. The men who were fighting the fire directly stood in the midst of the flames, not without great danger to the devotion of F.—28th, the fire was gotten under control, the bridge was saved, and the open spaces were covered with planks and boards procured by this battalion. Thus the smart Rhinelanders of F.—28th had done a piece of work that would have done honor to trained pioneers; the latter were—not there! The value of the presence of mind and of the organized work is evident, for, as matters stood, if F.—28th had not acted so promptly, no great bodies of the Elbe Army could have taken an active part in the battle, since *no other passages were constructed*, as is well known. The soldier should be familiar with such instances, that he may know how to help himself in similar situations.

During this passage I stood in the middle of the emergency bridge, and, as it had no railing, my position was not a pleasant one, because the bridge, of which a number of parts were missing, was tottering under the weight of the guns

*Statement of Colonel Kneusels, the chief of 11th—28th (11th Company of the 28th Regiment). See author's note, page 67.—*Tr.*

and carriages (according to my notes, 6 batteries each of the 7th and 8th Army Corps). During the long time it took the artillery to cross, I was thinking more of what would be the result if a few shells should burst here; and not without reason, for as yet I had not noted any pronounced progress of the battle; it rather seemed to be at a standstill, and from Alt-Nechanitz I had been able to observe with the naked eye the advance and retreat of several columns. Some apprehension seemed even to have seized the cool and heroic Lieutenant-Colonel von Schöning, commanding I.—57th,* whom the circumstances had completely deprived of all control over his battalion during the passage. Sullenly and impatiently he looked on from the other bank, he himself with the 1st Company being separated from the remainder of his command. Under such circumstances time passes slowly, every one feels the inconvenience of the situation, and the oftener I consulted my watch, the more impatient I became. Still I will state that the long column of artillery moved with great steadiness, and that, with the exception of a few puffs and cuffs, no accidents occurred. I breathed more freely, however, when the artillery was across, for nothing is more uncomfortable than to be deprived of all freedom under such circumstances. The main thing was that the bridge, which had been repaired by our infantry with commendable care, proved equal to the demands.

At Alt-Nechanitz I had observed few traces of the battle, and our long delay there from 10:30 a. m. until 1 p. m. in no way differed from an ordinary assembly of troops in peace. The officers of the various regiments visited each other, conversed, and shared what little edibles they had,

*The Roman numerals before the dash denote battalions, the Arabic figures companies; after the dash the Arabic figures denote regiments.

and none seemed to have any premonition that the 3d of July was to be a historic day in German history. To be sure, the attention of the conversing groups was frequently attracted by the battle-field, which extended in incomparable grandeur to our extreme left, with its gigantic masses of fire and dark, hovering, heavy clouds of smoke; but the conversation, as in the midst of peace, turned on the most harmless topics, nor did various adjutants, etc., inquiring for General von Herwarth, arouse unusual curiosity. The general impression was that great masses were engaged on either side, and even the men seemed to feel it; their quiet and decorous behavior during that hour deserves special mention.

On the farther side of the bridge the picture changed; the bodies of some Saxon soldiers and of a poorly clad woman were the first dead I saw. Some of the houses along the Bistritz had been badly damaged; the broad village street, however, presented quite a peaceful appearance; its solitude and various hospital flags alone reminded one of war. Beyond the village we met a fusilier of the 17th Regiment; as he approached I recognized him as the servant of Lieutenant von Czernicki (F.—17th), a friend of mine from boyhood. I just had time to inquire for his master without noticing that he was carrying an officer's cloak and saber; as he pointed to them, I understood what the good man was unable to utter. His master had been killed, and what the fusilier was carrying were the dead man's belongings. The meadows of Nechanitz spread in such luxuriant green that signs of the not inconsiderable action which had taken place there could hardly be discerned; here and there a body covered with a cloak was all; the field had been thoroughly policed. In Lubno we first met some of our own troops. It was the 7th Rifle Battalion which had taken position behind the edge of the village to hold this point in case of a re-

verse. A few greetings, and on we went. It is one of the cases in which such use of the rifles has been criticised. I am unable to do so; the rifles could be spared because the battle was constantly progressing, and there can be no doubt that it was most important to hold the bridge, and the rifles were the very men to develop their full fire power in Lubno and in the surroundings of the village. Measures should not be judged by their results; it should rather be inquired what their object was, and whether that object was of sufficient importance to keep back a whole battalion. In this case the answer should be in the affirmative.

Although on the whole the (preparatory, tactical) measures of Generals von Herwarth and von Schöler and the dispositions for the attack on Probus—Prim surpass many greater and smaller attack movements of the wars of 1866 and 1870-71, still the most important matter was neglected—i. e., timely provisions for crossing the Bistritz more rapidly. A single narrow bridge was not enough; two or three should have been constructed here or near by, all the more because the case of a reverse should have been reckoned with. Had that been done, the Army of the Elbe would have engaged earlier and in greater force, which was particularly desirable from the strategic point of view, because the direction of Königgrätz, which might be assumed to be the enemy's principal line of retreat, was more sensibly menaced from the south than from any other point. If Bor had been reached at 2 p. m., for instance, which would not have been at all impossible, a retreat on Königgrätz would have become impossible and the greater part of the enemy would have fallen in the hands of the II. Army on the field of battle. Thus the most trifling omissions of a tactical character exact their penalties when considered from a

higher point, and there was certainly no lack of time or material for the construction of the requisite bridges.

In such cases specially selected officers should be stationed at the crossings to assign the troops to bridges, and it is advisable to assign artillery and cavalry to one, and infantry to another bridge. Under circumstances like those before us the infantry bridge might perhaps not be very strong, and had that been the case, the construction of a second bridge for infantry could have presented no difficulties even in the absence of resources other than those found in Nechanitz. But when there is but one bridge, a bridge guard becomes all the more indispensable. There was none, and I remember vividly the bewildered faces of the infantry as the artillery trotted through its ranks without ceremony, and only came to a walk on the bridge. It was the "right of the stronger."

By not making timely provision for the necessary crossings the headquarters of the army made a mistake that could not be rectified. The Prussian Official Account does not mention the incident, though it is one of the most instructive of recent wars; nor does the Austrian Account, which, as regards our side, frequently draws on the Prussian source. The former simply states, on page 368, "that the 28th Brigade followed the 27th at 800 paces." That may have been the distance at the start, but the incident which I have related increased it to an hour's march. The consequence was that the 27th Brigade attacked before the 28th, although it had farther to march than the latter. Was that intentional? In the subsequent course of the action the two brigades never were abreast of each other, although the 28th accelerated its march.

(b) *The Deployment.*—The unpleasant incident had placed General von Hiller in a very painful situation; since

the 27th Brigade had entirely disappeared from his view, and as there was no one at the moment to tell him where to march, nothing remained for him but to act on his own responsibility. Marching on to Popowitz, he inquired of Major von Sell, commanding the 7th Rifle Battalion left at Lubno, who pointed out to him the direction taken by the 27th Brigade. General von Hiller now gave orders for the 28th Brigade to follow the 27th. During the march on Popowitz, Captain von Schadow, of General von Herwarth's staff, brought an order to General von Hiller to halt the head of his column, and form line to the right. General von Hiller rode forward to inform himself of the situation, and in doing so met General von Herwarth himself, who pointed out to him on the left a barely visible spire as the objective of his attack, saying, "That is Probus; advance in that direction."* That, according to my notions, is the "task system" (*Auftragsverfahren*).

On returning to his brigade, General von Hiller found it still in the act of forming up, and had time to communicate the order of General von Herwarth to the regimental and battalion commanders. They then rode to the front with General von Hiller beyond the ridge of Popowitz, so that they also could inform themselves of the situation and quietly talk the matter over. Meanwhile, the battalions had formed in double column on the center in two lines, but the "finer work" of dress and direction was still lacking. That was now done in regulation style, so that the brigade was facing due east, the battalions dressed accurately as with a string. Since Colonel von der Osten (57th Regiment, in first line) was an expert in these things, it was quickly done; at any rate, the time spent on this calm and deliberate prep-

*From a letter of General von Hiller.

aration amply paid for itself in the subsequent action (Sketch I.).

In the first line were 2 battalions of the 57th Regiment,* I.—57th on the left, F.—57th on the right; in second line, 2 battalions of the 17th Regiment,† II.—17th on the right, I.—17th on the left. Luxuriant fields of rye as tall as a man covered the height and the entire space to the Problus—Prim plateau, except the meadow bottom in front of Problus—Prim. All commanders were in front, and there was a silence and attention among the regiments that could not have been greater on the drill-ground. After convincing himself that the brigade faced exactly in the desired direction, General von Hiller again repaired to Colonel von der Osten,‡ of the 57th Regiment, pointed toward the southern point of the wood of Popowitz, and said: “That is the direction for the present; afterward the church spire on the left.§ “Have the colors displayed!” That done, Colonel von der Osten turned toward his regiment, called for three cheers for the King, which were given with a will, and added with his fine, rich voice: “And now with God.” His calmness and assurance made a deep impression on those assembled. The commanders then resumed front toward the enemy. My own attention (I was on the right of the skirmish platoon of the 2d—57th) was deeply engrossed; I had hardly imagined going into a battle in this manner; what I saw far surpassed my imagination.

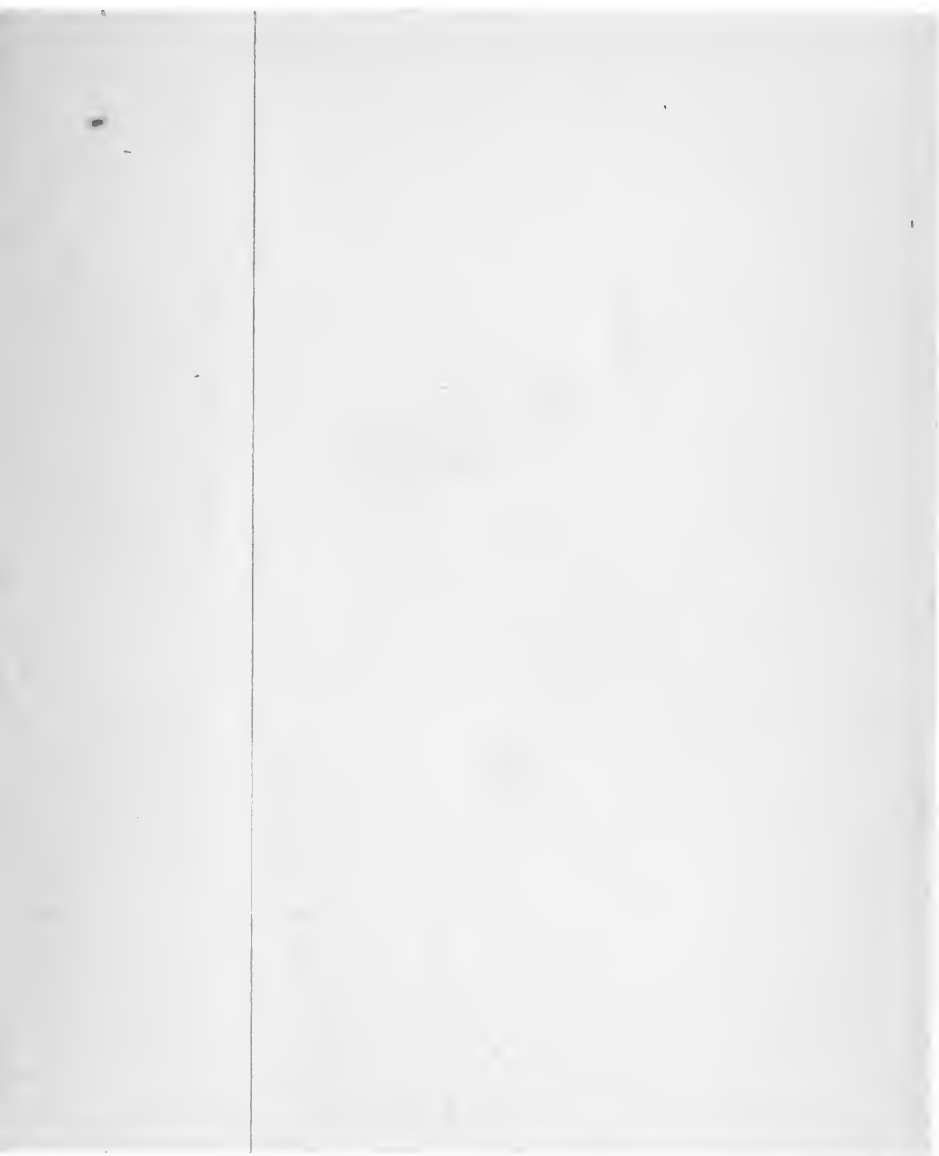
Our men, who had not heard a gun shot except at Münchengrätz, and who to-day had for several hours watched the advancing and retreating columns in the center, were in excellent spirits. They had marched 23 kilometers on soaked

*The II. formed the escort of the reserve artillery.

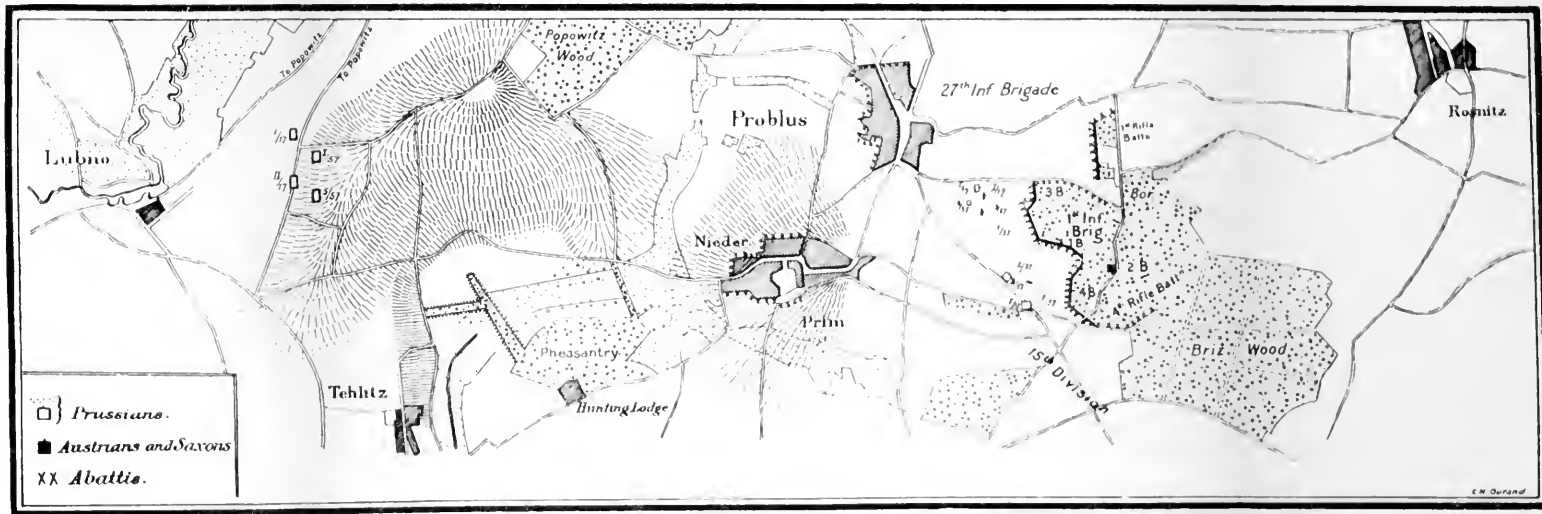
†F.—17th was with the advance guard of General von Schöler.

‡Died in Berlin as lieutenant-general.

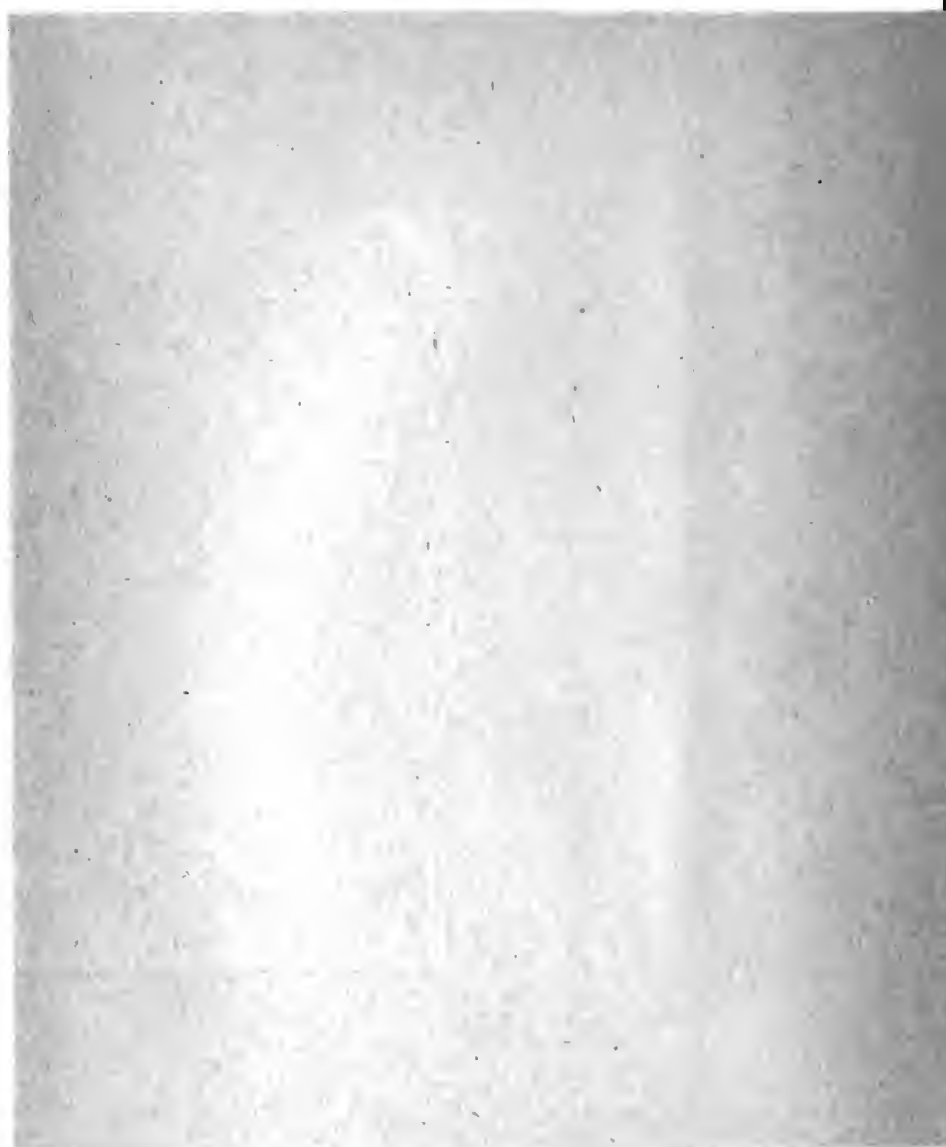
§The church spire of Problus.



Sketch of the Attack of the 14th Division at Königgrätz. The 28th Inf Brig just before the Attack.



Sketch I.



roads and across fields, and had been under arms for ten hours without anything to eat. Having received its orders early, the brigade had started early. At 9:30 a. m. it stood in rear of the right of the I. Army, whence it moved off toward the south and reached Alt-Nechanitz about 10:30 a. m. The lack of bridges enforced a long delay, and the early start of the brigade and its early arrival on the field remained without effect on the course of events. But, the long delay ended, and the brigade once on the field, it was the fine example of all, particularly of the higher officers, and the imperturbability and assurance they exhibited, that inspired the men with faith and confidence. Early in the morning a fine rain had fallen, which changed to a dense fog about 7 a. m. It settled slowly about noon; the columns of smoke and flames of the burning villages and woods drifted in long lines slowly to the southwest, borne by a light northeast wind. Toward 2 p. m. it cleared up, but the events on the height of Problus could be seen but indistinctly, and it was only after the heights had been taken that the weather cleared up entirely. In consequence of the rain and fog, the tall rye-fields were saturated with water, so that the troops arrived at the heights of Problus as wet as though they had been in water up to their necks. That was more specially the case with the leading platoons, but all suffered equally from the soaked ground, which impeded movement very much.

At the command of General von Hiller, "Brigade march," the brigade moved off. At first all battalions were in double column on the center. As soon as the ridge of Popowitz had been crossed, the brigade assumed a different formation; General von Hiller, who was riding on the right of 2d—57th with Lieutenant-Colonel von Schöning (I.—57th), ordering I.—57th* to deploy. The other bat-

*4th—57th was detached as escort to Schmelzer's battery.

talions meanwhile took the short step, which was done to perfection despite the artillery fire, and 3d and 1st—57th deployed their skirmish platoons in double time, their rear platoons following at the regulation distance. Lieutenant-Colonel von Schöning now joined the skirmish line of 3d and 1st—57th, where he remained during the remainder of the action. As General von Hiller and Colonel von der Osten were riding 6—10 paces to my right until 2d—57th was deployed, I was in a fortunate position to hear every word they spoke. After descending into the bottom between the ridges of Probus and Popowitz, the brigade had about the following formation: Firing line, 3d and 1st—57th (at first one platoon deployed, afterward prolonged and reinforced by another platoon); exactly in rear of the center of these two companies (3d on the left, 1st on the right) was 2d—57th; closed in company column 200 paces to the right and abreast of 2d—57th was F.—57th. In second line there remained for the present II.—17th and I.—17th. The brigade had loaded before starting.

Having established the first few movements, I must relate a curious incident. When the brigade moved off, the bands of both regiments struck up; that of the 57th Regiment was at first with I.—57th, and when that battalion was ordered into the firing line, it remained with 2d—57th. Notwithstanding the wet rye-fields, the soaked condition of the ground, and a very severe artillery fire, the bands of both regiments continued to play with perfect precision and with the customary intermissions until the first line was within 250 meters of the abattis of the woods of Briz, and ceased playing only when 2d—57th was deployed. The last march played by the band of the 57th was the men's favorite march, in which, according to custom, the pauses recurring between the bars were filled up by the men joining in with: "O

Johnny, what a hat!" In this instance the men did not join in, but the enemy did with a sudden and heavy hail of lead; I still remember how comical the situation was. The staff oboist had failed to notice or hear the repeated orders of Colonel von der Osten to stop; the commander of 2d—57th did not seem inclined to interfere on account of the proximity of the superiors, and was, moreover, about 50 paces in front on horseback; the mounted officers could meanwhile see how closely we had approached the enemy, but the troops themselves could not yet overlook the plateau, when the music suddenly ceased. It was not the staff oboist, however, who had given the signal to stop—it was the enemy; the former looked angrily around, and Colonel von der Osten's order, "Northe, stop," was heard just as the music had ceased.

I have related the foregoing because it is a typical example of how firmly peace habits are rooted, and because it shows a fine piece of discipline, notwithstanding the comical incidents connected with it. If peace habits are rooted so firmly, then this harmless example conveys a serious warning to teach the men in peace only reasonable things, in order that their lives may not be fruitlessly sacrificed to wrong habits. Moreover, can any other large body of troops show a similar example?

After crossing the ridge of Popowitz, the view changed completely, as though the curtain had been raised in the theater, and a stage suddenly laid before our eyes. And what a stage! The entire hostile front was wrapped in smoke and flame in the fullest sense of the word, from Prim to Problus, Stresetitz, Lipa, and Chlum. Between Prim and Problus we saw one long line of artillery, and on our side, as far as the eye could reach, advancing skirmishers and columns, waving colors, playing bands. The effect of the sudden transformation was noticeable also among the

men. Every one craned his neck to see, and I can say honestly that I imagined myself most anywhere except in a great decisive battle. And the effect must have been similar on many, for even the admiring "Ah!" was not lacking. Whether anything grander ever occurred in history before I do not know, but I may say that I have never seen anything even approximately affecting the imagination as this battle stage; and when, under such circumstances, a smart advance is kept up, the soldier conquers without knowing; the advance was as though "well greased." A lively and well-directed artillery fire greeted us, but we advanced without halting to within 250 meters of the abattis of the wood of Briz.

(c) *The Battle-Field.*—The battle-field of the brigade was a wide depression extending 2000 meters north and south between the ridges of Popowitz and Problus. Its deepest point lies about midway between the two. With the exception of the cross-road which leads from Popowitz to the Lubno—Nieder Prim highroad and is lined with trees, the battle-field was entirely bare and *devoid of cover*, while all the remaining infantry of the Army of the Elbe was able to approach under cover to within 300 and 700 meters of the main points of the enemy's position.* The villages of Problus and Prim, which at the time of the attack of the 28th Brigade were still in the enemy's possession, were, on the side toward us, prepared for defense; that fact was unknown to the higher commanders, and until *after* the orders for the attack had been given, the murky weather prevented details from being made out even with a good glass. In the subsequent course of the attack we were

*On page 369 of the Prussian Official Account it is stated that from the wood to the village the 27th Brigade had to traverse 1600 paces of open ground. The actual distance is 700—800 meters.

very much surprised to suddenly encounter abattis, which were 15 feet high in some places and encircled the entire north and western edge of the woods of Bor and Briz. A ridge steeply sloping toward the west extends from Problus to Nieder Prim, but it had not been prepared for defense. The distance from the edge of the ridge to the wood of Briz was then about 350 meters, and although that may seem a short distance now, it should be remembered that the ground was almost as flat and bare as a table. Though about 800 meters from Problus low meadow grounds stretch to the south, where they closely approach Nieder Prim, they were of little effect as cover, because no attention seemed to be paid to them; at any rate, we marched across them without halt. The field of action of the 28th Brigade must therefore be counted among those entirely devoid of cover and shelter. What could be done there in 1866, however, will no longer be practicable in the future.

The distances had not been systematically marked by the enemy; at any rate, I observed no marks except on felled trees along the Lubno—Nieder Prim road; others I neither noticed, nor did I hear of any.

(d) *The Attack.*—Maintaining the direction indicated by General von Hiller, the brigade marched bravely onward; some of the officers exhibited some exuberance of spirit, and I believe that there are few examples in military history of a large unit marching to battle with such a light heart. The difficulty of maintaining a certain direction is shown by the fact that, notwithstanding the careful previous arrangements, the brigade advanced its left shoulder more and more toward Nieder Prim. When General von Hiller noticed that, and also that the large felled trees on the Lubno—Nieder Prim road were range marks prepared by the enemy, he moved the entire brigade more to the left; still the skir-

mishers of 1st—57th found an opportunity to subject the enemy to a lively fire as he withdrew from Nieder Prim. 1st—57th passed through Nieder Prim followed by F.—57th.* General von Hiller showed an icy coolness, but his chestnut horse was all excitement and bathed in perspiration. All his talking and petting could not quiet the animal. The horse was of noble blood, and there was a peculiar charm for me in watching its movements and efforts; I do not repent having made full use of the opportunity, for never afterward have I seen a noble horse struggle so long with excitement, or observed the beautiful attitudes peculiar to a horse under such conditions. It is not less instructive or enjoyable than the observation of a man under similar circumstances.

Although the horse gave his rider a good deal of trouble, the general never changed a muscle of his face. His peaceful, kind expression remained the same and he was as laconic as was his habit in peace. "The church spire to the left, gentlemen, I pray!" These and similar words he repeated several times. By the side of the small figure of the general, Colonel von der Osten on his big horse looked like a knight. He too was cool and attentive to his regiment and observant of the enemy. While the brigade in this shape was crossing the meadow west of Probus—Prim, we heard protracted hurraing from the left front. It came from the troops who took Probus! Shortly afterward a cuirassier brigade passed to the left of 2d—57th, after attempting a charge on the Saxon artillery position at Probus—Prim. The charge of this cavalry is very instructive, but, as is usually the case, the most instructive incidents are very adroitly buried if any blunder has been made. General von Kotze had ap-

*The positions of troops on the maps of the Austrian Official Account are wrong. A better sketch of the attack will be found on Plate I. of the History of the 16th Regiment, and on Plate I. of the History of the 57th Regiment.

proached under cover by the broad road which leads from Popowitz through the wood to Problus, his squadrons marching in rear of each other with half-platoon front. The capture of Problus was calculated to suggest a charge on the retreating enemy, whom the two cuirassier regiments had approached under cover to within 700 meters; in that case it was necessary for the cavalry leader to *choose the right moment* by personal observation and judgment. To be sure, General von Kotze did observe, but not *with a tactical eye*. In view of the fact that in front and on the right there were several batteries, but 700 meters distant, which during the preceding conflict had had time to get the exact range and which could not be attacked under cover, it certainly was a mistake *to come out of the wood 700 meters from that artillery, to deploy and to charge that mass of artillery uphill*.* Owing to the short distance, the first squadron of the Pomeranian heavy cavalry, which marched at the head, received such a fire that after some 400 paces it turned off to the right; the squadrons following in rear attempted the same feat, but in vain. As it usually goes with cavalry in such cases, the fastest horse leads and all others follow. The cavalry could not save itself by returning into the wood, and galloped along its southern edge in the direction of the ridge of Popowitz, during which long and exposed ride it made a good mark for the enemy. The two regiments hurried to the rear intermingled in one big mass; this big "pulk" rode down the right wing of 11th—28th, and the left wing of the skirmishers of 3d—57th and I.—17th came near sharing the same fate. The disorder was indescribable; the lengthened commands "Ditch" informed us that the mass of horsemen had also encountered obstacles, and for a moment we

*The same thing was attempted under similar circumstances, but with larger bodies, at the Mance ravine on August 18, 1870.

saw as many legs of horses and men in the air as swords. The horsemen in rear crowded those in front in panicky flight, until the crowd was out of the enemy's fire, and even then they continued their flight. The fallen horsemen gradually disentangled themselves and hastened after the others by ones, twos, and threes. The retreating mass did not make an inspiring impression, and the greater was the merriment provoked by a cuirassier of the 8th Regiment, who, in trotting past 2d—57th, called out: "At them, boys; they are retreating." This fine cavalry, which lost 1 officer, 32 men, and 58 horses, was useless for the rest of the battle, and how welcome would not that cavalry have been a few moments later in the same direction! If General von Kotze or any of his advisers had manifested any tactical judgment whatever, it would have been easy after the capture of Probus to reach that village under cover, and Bor in the same way after it had been taken. The moment for attack would then have arrived and the results would presumably have been great. Thus the lack of tactical judgment exacts its penalties. It is bad enough for the other arms, but cavalry can never make good such blunders; it simply disappears from the field for good. At the moment when the retreating mass passed the first line of the 28th Brigade, one-sixth of the horsemen covered the ground and the remainder were no longer masters of their horses.*

Soon after the general staff officer of the 14th Division, Major von Thile, reached General von Hiller. "Probus," he said, pointing to the left, "has just been taken; the brigade is no longer needed there; advance straight between the villages" (Probus and Nieder Prim). The general lis-

*The Prussian Official Account does not mention the incident. The Austrian Account does mention it (page 339, III.), but at the wrong place and at a wrong (later) period.

tened and a loud "Very well" was all he answered. Major von Thile's face was beaming with joy; he turned his horse and rode away to the left, giving a few cheering words to the troops. As the brigade approximately had the indicated direction, it was not difficult to carry out the task. The general ordered the left (2d—57th) to hold back a little, and the thing was done. The height between Probus and Prim, from which the *Saxon artillery had withdrawn* by this time, was now being occupied by the 12th Saxon Infantry and 4th Rifle Battalions coming from Nieder Prim; we also observed 2 or 3 columns which were rapidly retreating from Probus and taking the direction of Bor. The 2 battalions just named greeted 3d and 1st—57th with several volleys, which, however, did not do much damage.* The 12-pounder smooth-bore battery (Schmelzer's) had followed the movement of the 28th Brigade, and when Captain Schmelzer saw the situation, the battery with gunners mounted on the carriages galloped forward through the midst of the skirmishers of the 3d Company of the Fifty-seventh, and *coming into battery in front of them*, opened on the enemy with canister at 400 paces. Never since have I witnessed equally resolute action, so much tactical judgment, and more decisive effect of a battery. That was initiative, an initiative by which not only the two hostile battalions were mown down by ranks, but by which the confidence of the attacking infantry was raised to exuberance. This example demonstrates how great the moral effect of the proper use of a battery may be on the other arms. The battery commander's ringing command, "400 paces, to the front, canister," was carried beyond the skirmish lines of the 3d and 1st

*The statement (see page 42, History of the 57th Regiment) that the 3d and 1st Companies halted and "took cover" against these battalions is incorrect, as our skirmishers did not interrupt their advance.

Companies of the Fifty-seventh to the second line of the brigade, and attracted the attention of the entire brigade. After a few rounds had driven the opposing infantry away, Schmelzer's battery galloped to the top of the ridge, whence it opened with equal effect on the two badly shaken battalions, and on Bor, and on the abattis of the wood of Briz. The Official Account states that the battery executed that maneuver against the village of Problus; at any rate, that is the inference. It is *possible* that the battery had previously fired a few rounds on the above mentioned Saxon detachments withdrawing from Problus; it is *not possible* that it fired on Problus, as the village was then occupied by the 27th Brigade; moreover, the battery had accompanied the 28th, not the 27th Brigade,* and had galloped, not through the skirmishers of the 27th Brigade, but through those of the 3d Company of the Fifty-seventh.

Up to this time our infantry (3d and 1st Companies of the Fifty-seventh) had each two platoons deployed; F.—57th, which, like the remainder of the brigade, with the exception of I.—57th, had moved in double column on the center, had one platoon each of the 9th and 12th Companies deployed; all the rest was in close order. From the *psychological point*, the "literary" version of the Official Account, bottom of page 369, is not very intelligible; it is stated there that the enemy's fire was unable "to accelerate the movement of our men." We may also discard the statement on page 371, "that the 28th Brigade suffered less at the hands of the hostile artillery, because it got into a dead angle." During the entire action there was a rare degree of attention from the division down to the last musketeer, and, although the determined behavior of the higher leaders gave to the movement

*The Official Account states, on page 368, that the battery was with the 28th Brigade in the second line of the division.

the appearance of a resolute and determined advance, yet the fire of the Saxon artillery managed to considerably accelerate our movement, and what the artillery fire did not do, the division commander did. Before the brigade had reached the crest of the ridge south of Problus, Major von Thile had ridden along the front urging greater rapidity of movement. About 3 p. m., moreover, the Army of the Elbe knew what was at stake. At that hour Problus had *just* been taken. The results of the day could be fully reaped only by the *most rapid possible* advance of fresh forces, and for that purpose the 28th Brigade was nearest at hand, as Problus formed the strategic point of the enemy's left. I will also state that between the ridges of Problus and Popowitz a dead angle does not exist and could not exist. The depression is generally *flat*, and becomes steep only in its last third. When we reached that point, the *entire Saxon artillery had prudently withdrawn from its position*. From that moment until the wood of Briz was taken, we received *no more* artillery fire.

The smaller losses of the 28th Brigade, as compared with those of the 27th, must be explained by other circumstances.

There is, in the first place, the difference of time. Ever since the blocking of the bridge at Nechanitz the two brigades had been completely separated.* The 27th Brigade had marched off at once without waiting for the 28th.† Thus it came that the 27th Brigade, which derived much more cover from the wood of Popowitz than the 28th Brigade found on its own ground, found Problus and the height south of it strongly occupied, and had to withstand single-handed the fire of that numerous artillery and infantry.

*Compare page 36.

†In all these descriptions the maps of the Austrian and Prussian Official Accounts of the battle of Königgrätz have been used.

Subsequently, when the 28th Brigade had crossed the ridge of Popowitz, the change of the enemy's fire from the 27th to the 28th Brigade could be plainly observed. But the former had already suffered severely. As Probus had fallen earlier than the height to the south of it, and as the Saxons had abandoned their artillery position on the latter before the 28th Brigade came up, the 28th Brigade was less exposed to fire and suffered less. Moreover, most of the shells failed to burst—they were Prussian percussion shells—and acted only as solid shot, and the 28th Brigade accelerated its march as much *as possible* in order to traverse the zone of the annoying artillery fire as quickly as possible.

Schmelzer's battery, which meanwhile was engaged on the height south of Probus, had been closely followed by our skirmishers exactly in the formation previously stated, the second company of the Fifty-seventh being in close order and in rear of the center of the skirmish line.

A curious incident may be stated here: While 3d and 1st of the Fifty-seventh, in conjunction with Schmelzer's battery, were maintaining such an effective fire on the two Saxon battalions, Lieutenant-Colonel von Schöning, turning around, noticed that the colors of I.—57th were with the second company. He sent his adjutant, First Lieutenant Böker, to that company with orders to have the colors at once taken to F.—57th, which was still in close order. Hence we saw, at that critical moment, the color section of I.—57th struggling all alone to reach F.—57th with the colors. Owing to the considerable distance and the soaked condition of the ground, the color section did not reach F.—57th until the firing line came to a *halt*, being thus without any protection for about 20 minutes. When the adjutant had rejoined Lieutenant-Colonel von Schöning, the latter remarked, "This is a hellish fire." Lieutenant Böker replied, "It is a good thing

that not every bullet hits," and he had barely uttered the last word, when he fell dead from his horse. (Statement of Colonel von Schöning, subsequently wounded at Vionville, and deceased.) Soon afterward Lieutenant-Colonel von Schöning, whose horse had been hit several times, received a glancing shot on the left side of the neck, but, hero that he was, he remained in the saddle. The blood ran down over his tunic; Von Schöning pulled out his handkerchief, tied it over the wound, and led his battalion to the end of the battle.

The crest of the ridge, which had been taken under fire by Schmelzer's battery and by our skirmishers, was covered with an unusually large number of dead and wounded. The cries of many of the latter were heartrending, but, being in column, we could not always step over them as carefully as we should have liked to, particularly because we were just then wheeling to the left in order to gain the direction of Bor and of the wood of Briz.* We all were surprised to see only wounded and dead Saxons, and Colonel von der Osten said: "Why, they are Saxons! Good-morning!" Soon afterward a wounded Saxon officer raised himself up from these tangled heaps and said to General von Hiller, as he approached: "Back; you won't be able to get through here!" The leading of the brigade as well as of the regiments at this time deserves the highest praise. Distances and intervals between the lines had been strictly observed, and after marching 1500 meters through high rye-fields and suffering severe losses, the brigade reached the height of Probus in such fine shape that the wheel to the left could be made *without first coming to a halt*, despite the uninterrupted-fire of the enemy. The oblique movement to the right and the wheel

*The History of the 57th Regiment here speaks of a third Saxon battalion, stated to have come from Nieder Prim. I did not notice it.

to the left had uncovered the front of I.—17th; to cover the new front General von Hiller ordered two companies of this battalion forward to prolong the line to the north of 3d—57th. General von Hiller, a man of great modesty, preserved a heroic coolness. The wheel having made an extension of the skirmish line to the southeast necessary, two platoons of the 2d Company of the Fifty-seventh were deployed for the purpose.* They advanced in double time until abreast of 3d and 1st, and soon after the entire first line halted.† Now we became aware that we were in front of a strongly entrenched position, from which an uninterrupted skirmish fire was maintained. Notwithstanding the short distance, the strength of the defenders could not be made out, and nothing remained but to open fire on the high abattis just for luck.

General von Hiller saw at once that on this ground, which was perfectly flat and devoid of cover of any kind, every minute's delay was dangerous, and decided to take the wood as quickly as possible. He ordered the second and third line to close on the first. Just as the second line had almost reached the first and we were on the point of making the assault with united forces, the signal "Cavalry" resounded on all sides. The situation was critical. We were on open ground and about 200 meters from a strongly occupied abattis (1 brigade of 5 battalions and the 1st Rifle Battalion at Bor). The skirmishers rallied, the battalions formed square; we waited in suspense half a minute, a minute—the cavalry did not come! A Saxon squadron, which had lost its way in the wood of Briz, had suddenly appeared at the edge of the wood, and on seeing its mistake and com-

*About 300 meters in front of the abattis.

†The music had just ceased playing. See page 75.

ing under the fire of the 1st—57th, it turned about and trotted back. That was all.

This little incident had checked the advance. It goes to show what harm signals may do, particularly when given before the facts are ascertained. Had that particular trumpeter not sounded the signal, which, in accordance with the Regulations, was repeated right and left, the abattis would have been taken without much loss and many prisoners captured. On the battle-field all trumpet signals except "All advance" should be carefully guarded against. They are prohibited, but they are not thereby prevented.*

While forming groups the rifle platoon of 2d—57th received a severe fire from front and flank, and the leader, Lieutenant von Stojentin, was mortally wounded. He turned the command over to me, saying: "I am done for; hurry to get up there, or all are going to be killed here! Adieu!" I did not see the gentleman again. He was a brave officer.

A description of the line of battle becomes the more necessary at this point, as no satisfactory idea of the situation can be gained from the Prussian and Austrian Official Accounts, or from the Histories of the 17th and 57th Regiments, either from the texts or from the troops marked on the maps; the troops shown on the maps of the Histories of those two regiments rather obscure the text. When all three lines had ascended the plateau between Probus and Nieder Prim, it was not possible to change the direction of the long skirmish line of 3d and 1st—57th. They continued the march straight to the front and brought up against that part of the edge of the wood which lies exactly in the mid-

*Similar mischief had just before been done by the signal "Assembly" after the capture of Probus. Details will be found on page 230 of the History of the Sixteenth.

dle between the two parallel roads leading from Probus and Nieder Prim to the wood of Briz; both companies halted about 200 meters from the abattis. 2d—57th was now thrown forward to the right (eastward), wheeling at the same time to the left; F.—57th remained on the extreme right, so that the skirmishers of its 9th Company touched the road from Nieder Prim to the wood of Briz, and halted abreast of the first line. I.—17th had kept straight to the front like 3d and 1st—57th. As this battalion had a considerably shorter distance to the wood, it encountered, together with the two just mentioned companies of the Fifty-seventh, very obstinate resistance between the northern flank of the 3d—57th and the road from Probus to the wood of Briz, which caused it to reinforce its skirmishers. The skirmish line now was facing the abattis at a distance of 200 meters in the following order from right to left: II., skirmish platoon; I., skirmish platoon; 4th, platoon; 5th, platoon; IV. and III., skirmish platoons. The II.—17th, following in rear of 2d—57th, formed square during the incident I have related, about 50 paces to the left rear of 2d—57th. As I.—57th, I.—17th, and F.—57th had deployed strong skirmish lines (1st—57th all three platoons, 3d—57th and 2d—57th two platoons each, II.—17th two and F.—57th four platoons), the skirmish line of the brigade extended from the road Probus—Briz wood to the road Nieder Prim—Briz wood, compassing the wood in a semicircle. (See Sketch I.)

After the error caused by the signal had been cleared up, and when the skirmishers had not yet or had barely reached their former places, General von Hiller, feeling the gravity of the crisis and aware of the difficulty of getting a lying-down firing line forward, rode back to II.—17th, and gave orders to Major von Bieberstein "to advance in double time and

pass the skirmish line in order to give a new impulse to the whole movement." General von Hiller joined the left of the battalion, and, on reaching the skirmish line, galloped forward, raising his sword and calling, "With me, skirmishers!" "The entire line," the general continues, "rose and rushed resolutely forward with drums beating. The cheering was continuous and the enemy's line was broken at all points at almost the same time." Close on my left H.—17th clambered over the abattis, but, being in close order, the battalion naturally lost its formation and was somewhat distanced by the more nimble skirmishers farther north.

It is queer that although many accounts of this event have been written, it did not occur to any of the historians to ascertain who gave the impulse to the assault. Had the regiments, as I have done, addressed the man to whom they owe so much in connection with this feat of arms, we would read in their regimental histories what I have written here, instead of those favorite but inane phrases. Instead of glorious feats, the regiments would have one *glorious* feat, worth more than the dozens which cannot be substantiated. My heart impels me to erect this merited monument to the hero of Bor and to make up for the neglect of the troops whom he led to such glorious victory. From the tactical point of view, it was my duty to get to the bottom of this example, which, *mutatis mutandis*, is applicable to-day in many phases of battle, in order *again and again to preach the truth in which I believe, that troops will conquer only when led*, and I feel deeply indebted to the revered general for acquainting me, though reluctantly, with the details of the affair.

The most obstinate resistance was encountered by I.—17th and I.—57th, the least by F.—57th. I.—57th encountered closed bodies which had to be overpowered by hand-to-hand fighting, and here Captain von Ledebur, commanding

the 4th Company, was killed at a range of 10 yards. The deployed platoons of I.—17th and I.—57th followed the enemy in the general direction of Bor, which farmstead was subsequently taken by 2d—17th. At the further edge of the northern one of the two copses situated here, 3d and 4th—17th encountered one battalion of the Sigismund regiment, which was totally dispersed by rapid fire delivered at 50 paces, and left several officers and about 150 prisoners in our hands. Subsequently II.—17th and I.—17th met in Bor, after the fighting there had ceased. Both battalions were halted there by General von Hiller. Some platoons had an opportunity to fire on Coudenhove's cavalry division at a range of 600—700 paces. About 5:30 p. m., the King came riding along from the north and was surrounded by the jubilant men of the 3d, 6th, and 7th Companies of the Seventeenth. The war lord stopped his horse a moment and addressed some gracious words to the troops. All three companies of I.—57th likewise followed in the direction of the retreating enemy. At the point where I was, the enemy did not leave the abattis until we closed on them; on the further side a man from the 1st Battalion of the 1st Saxon Infantry Brigade fell into my hands and entreated: "Please do not harm me; I am only a carpenter." Specially remarkable is the fact that the men, though carrying their packs, made the long rush of 200 meters *without stop*. The consequence was that the additional effort in climbing over the abattis so exhausted the men that immediate pursuit became impracticable, and it would, moreover, have been very difficult in many places, owing to the dense underwood. As these various causes had loosened the formation, some of the commanders assembled their men on the road leading from Bor southward through the wood; thus II.—17th and 2d—57th. In forming

the company my servant, a small Westphalian, came up to me; he had been shot through the cheeks before the assault on the abattis. As he happened to be quite near to me at the time, I told him to go to the rear. But the brave little fellow thought otherwise; he said he wanted to be in the attack on the abattis, and he kept his word! Now he went in quest of a dressing station. His name was Werthmann, and, on my recommendation, he got the medal of honor, but the regimental histories fail to say anything about the affair. The delay mentioned explains why II.—17th and 2d—57th were late in reaching the further edge of the wood. In crossing the wood, where the Fifty-seventh took about 140 prisoners, we saw the effect of our own guns, with which the Saxons were also armed. After the infantry had withdrawn from the wood, the Saxon artillery opened a severe shell fire, and I confess that the din, the echo, the flying splinters of wood and iron have deeply impressed themselves on my memory; and those who had to stand that artillery fire will understand why in 1870-71 the French showed some nervousness under it. Up to that time there was nothing more terrible than a bursting percussion shell, and the Saxon artillery shot well. As soon as the men had been assembled, therefore, the advance was resumed, but 2d—57th lost temporarily all connection with the other units of the regiment. Emerging from the northern edge of the wood, 2d—57th met General von Hiller, Colonel von der Osten, Colonel von Kottwitz (17th Regiment), and Lieutenant-Colonel von Schöning, the latter with a bloodstained handkerchief about his neck; they had ridden around the wood on account of the abattis. 2d—57th advanced thence in a northerly direction, resting its right on the northern edge of the northern copse of Bor, the greater part of the company extending westward over the open field and facing north. At

that moment the signal "Cavalry" again rang out along the whole line. The officers just named sought the shelter of the wood and so did 2d—57th; but, as no cavalry could be seen from there, 2d—57th resumed its former position, whence it witnessed the grand attack of Condenhove's cavalry division and the charge of the 1st Guard Dragoons. I do not believe that a single shot was fired, and indeed the view of those splendid lines of horsemen was so overwhelming that the men from sheer surprise and suspense forgot their rifles altogether, although the distance of about 700 paces admitted of effective fire; and I, though their commander, did no better! Soon many riderless horses ran panting here and there; several came through our skirmish lines, where some of them were caught, so that the officers, many of whom had had their horses killed, could provide themselves with mounts. Thus, Captain von Stwolinski (1st—57th), First Lieutenant von Bernewitz (2d—57th), etc. (Their horses had been struck by several bullets.) General von Hiller now ordered 2d—57th to return to the northern edge of the wood of Briz and to occupy the same for the present. Meanwhile, we heard prolonged cheers from Bor; it was the greeting which the Seventeenth, posted there, were giving to their war lord (page 90). In that way I unfortunately was deprived of the enjoyment of this scene, of which I only learned in the evening, when the brigade was assembled.*

I must mention here a special incident. Shortly before proceeding to the assault on the abattis, we observed clothes waving along the entire front of the abattis before us, which gave us the impression that the enemy meant to surrender; that was not the case, however, the Saxons

*These are the facts! What is stated on page 45 of the History of the 57th Regiment is incorrect. Queer that nothing is said there about the King, whom 3d—57th should have seen.

maintaining a severe skirmish fire against us to the last. The waving of the clothes was observed by many, but, notwithstanding my efforts, I have been unable to ascertain the cause.

It seems that the Saxons made good use of the time we lost in forming squares, for the withdrawal of their main body; otherwise more prisoners would, under the circumstances, have fallen in our hands. As regards our own fire, the dead and wounded lying in rear of the abattis showed it to have been more effective than we imagined, particularly opposite 2d—57th, which may be explained by the fact that the enemy here was enfiladed by 1st—57th. On making a closer examination next morning, I found that most shots had gone high, as the branches of the abattis and of the trees on the edge of the wood bore many marks of infantry bullets 15 to 20 feet above the ground. In the wood of Briz neither infantry fired much, though single shots could be heard there until next morning (the pieces which were picked up loaded were being discharged).

The fight at the abattis was very obstinate, but I did not see any hand-to-hand fighting with the bayonet anywhere; several Saxons were still firing as I was crawling through the abattis, and my company commander, First Lieutenant von Bernewitz, who had the hardihood to remain mounted until he reached the abattis with the 3d platoon of 2d—57th (which was in close order), became the target for a heavy fire, and his horse received several shots at close range. He now dismounted, "only," he said, "because he could not ride the beast over the abattis." The scene was not devoid of comic features, when at his call "Horseholder" quite a number of men promptly volunteered for that duty. The list of casualties shows a first lieutenant of the Landwehr, Philippi, 2d—57th (4th platoon), as wounded in the

foot by a bayonet thrust. Philippi was not picked up near the abattis, but was found deep in the wood by Ensign Schreiber, who assisted him to mount a captured horse and in that way transported the not very military figure to the dressing station after the fight was over. It was a queer sight: the small ensign with a big sword by his side, in top boots, holding the big sword with his left hand to keep it from getting between his legs, and with the right carefully leading a big black Austrian charger on which sat Philippi, knapsack on his back, holding on to the saddle with both hands, his legs pulled up high, his back arched, and in rear of the horse, as "escort," a troop of 20 captured Austrians and Saxons of all arms, some in odd garb; the procession provoked ringing laughter. Thus are grave and comical scenes combined.

According to statements made to me by Lieutenant von Redern of F.—16th, who had met Philippi afterward, the "bayonet thrust" was an accident due to his own awkwardness. But, as it usually goes with such things, Philippi became an "interesting" personality, and however often he told his story, I have never believed it. The "bayonet thrust" in the *first* edition of the Regimental History of the 57th Regiment has been changed to a "contusion" of the foot, probably in consequence of my writings.

The Saxon Official Account says that the 1st Rifle Battalion distinguished itself highly by its stubborn defense of the abattis, though at the time threatened in rear. It was the 3d Company of the 57th Regiment that advanced against the rear of the 1st Rifle Battalion. The battalion had occupied a copse to the north of the wood of Briz, and its retreat was probably difficult. It also lost the greatest number of prisoners. There was no bayonet fighting at this point either, but there was probably a stubborn fire fight at 50 paces, and closer, against I.—17th.

The tactical leading must be pronounced excellent. The action of the 28th Brigade in forming squares under the circumstances might be criticised, and I have been told that, instead of complying with the signal, General von Hiller meant to proceed at once to the assault on the abattis. To this it may be replied that, the signal having once been given, the general could not prevent the troops from obeying it. It has never been ascertained who gave the signal.*

Owing to the cover in front, the appearance of cavalry was not at all an impossibility.

The Prussian Official Account says, on page 394, that "further pursuit was entrusted to Captain Streccius with the 2d Company of the 17th and 2d Company of the 57th Regiments and some re-formed skirmish platoons." The reader may decide for himself whether and how far Captain Streccius' advance (to the northeastern edge of the copse of Bor) may be called a pursuit. It is certain that the 2d Company of the 57th Regiment was never for a minute under Captain Streccius' orders, whom I never saw on the day of the battle, and that none but men from the Seventeenth could have been among the formed skirmish platoons. For the 3d, 1st, and 2d Companies of the 57th Regiment, which were following the same direction in open order, were never separated from the regiment; F.—57th was too far away from the 17th Regiment; II.—17th did not reach Bor until after it had been taken by I.—17th, and no one got farther than that point!

The wood of Briz was now occupied as follows (5 p. m.):† northern edge and northeastern angle, including Bor,

*This is confirmed by a letter from General von Hiller of February, 1890, to the author.

†As regards time, I will state that, according to my observations, Probus fell about 2:45 p. m., and that the farmstead of Bor and the wood of Briz may have been taken about 3:30 p. m.

3d—57th, 1st—57th; eastern edge, F.—57th; northern edge, 2d—57th; Bor and the two copses, I.—17th and II.—17th. About 6:30 p. m., General von Hiller conducted the 28th Brigade to the plateau west of the wood of Briz, where the entire brigade camped during the night. The 27th Brigade bivouacked in and around Probus.

Hiller's brigade had purchased its success with the loss of 10 officers and 190 men, and had captured 12 officers and 300 men.

Of these losses, 8 officers and 99 men fell on the 8 companies of the Fifty-seventh, and 2 officers and 91 men on the 8 companies of the Seventeenth; the 3 companies of I.—57th (firing line) had suffered most—viz., 6 officers and 64 men; the 2d company lost 2 officers and 20 men.

The account on page 43 of the History of the Fifty-seventh would make the reader believe that General von Hiller was encouraged to make the attack by the King's adjutant, Lieutenant-Colonel von Stiehle, and that the lieutenant-colonel arrived before the signal "Cavalry." According to the written statement of General von Hiller, now before me, both statements are in error. If it were otherwise, the general's credit as a leader and as a hero would be lowered. In fact, Lieutenant-Colonel von Stiehle did not arrive until after General von Hiller had brought up Bieberstein's battalion (II.—17th) and "the lieutenant-colonel did not strengthen the general's resolution to attack," but brought him a categorical order not to advance further when he saw what arrangements General von Hiller had made for the occupation of Bor and of the wood of Briz! After General von Hiller had arranged for the occupation of the edge of Bor, the troops there received fire from the southeast; from their headgear, General von Hiller recognized the firing

troops as Prussians, and sent the adjutant of I.—17th, Lieutenant Hesse, to inform them of their error. When he reached them, he found that the second battalion of the Thirty-third, under Major von Bieberstein, had taken the Prussians at Bor for enemies. Further mischief was thus happily averted. Not until after these incidents did Lieutenant-Colonel von Stiehle find General von Hiller. Soon afterward, after dark, an order came from the 14th Division for the brigade to move to Probus. As the men were very much fatigued, General von Hiller sent his adjutant, Lieutenant Arndt, to request permission of Count Münster to let the brigade camp where it was, which request Count Münster granted.

When yet beyond the enemy's fire the brigade had been divided into two lines, and after the advance had begun, three lines were formed. This formation was retained until the first halt (250 meters from the abattis). The regiments were one in rear of the other. Their march was across open fields, and during the movement a considerable oblique movement and a wheel to the left were made. Within effective infantry range (200—250 meters) the brigade passed from the open to the close formation (squares), and then resumed open order; *all* its forces closed on the enemy *simultaneously*, surmounted high abattis, closely followed the withdrawing enemy through underbrush, very dense in parts, and soon after overthrowing the enemy the brigade again stood *assembled* and *formed* as though after a bloodless peace exercise. It traversed over 2000 meters, and used exclusively double column on the center with skirmishers in front. I.—57th alone, whose able commander was subsequently, as colonel of the Eleventh, wounded at Rézonville on August 16, 1870, in one of the many bloody

attacks on Height 970, had been completely deployed during the action, with the exception of 2 platoons.*

At about 350 meters the skirmishers (3d and 1st—57th) opened fire and fired while in motion, and not without good results, as we found later. Notwithstanding their open order, they suffered the greatest losses, which may be in part attributed to the signal "Cavalry." The small losses of the strong columns may, in view of the uniform character of the terrain, be thus explained: that the Saxon musket did not carry as far as the second and third lines. All officers, including company commanders, remained mounted during the whole of the action.

The attack may well be called a model of brigade leading, and General von Herwarth, who had watched it attentively, used to speak of it up to his death. General von Falckenstein said to General von Hiller at Hanover that General von Herwarth had expressed himself to him to the effect that he owed his success to the 14th Division, and I can testify that General von Falckenstein addressed the regiments (16th and 57th) in the same sense at Hanover when they were transferred from his own to the X. Corps, then in the process of formation.

The night on the plateau of Probus was very chilly and

*One of my readers has written me on this point as follows:

Colonel von Schöning had been severely, though not mortally, wounded by a rifle bullet in the upper part of the arm. He was to be carried off by four fusiliers on their rifles, and gave his consent. But as the French soon afterward made a counter-attack, Colonel von Schöning ordered the men to leave him and retire alone. "I don't want you to be killed on my account," he added. In the attack subsequently made on our side, the Eleventh reached the place where Colonel von Schöning was lying immovable on his back, his face toward the enemy. "Never again," says my correspondent, Mr Heinemann, of Altona, "have I had such an opportunity to admire a hero as here. Notwithstanding his sufferings, he called to us: 'Children, are we winning?' 'Yes, Colonel.' 'Well, then, let us give cheers for our king!' and we gave three cheers with a will. I have not seen him since."

rarely have I suffered so much from cold; but I was able to satisfy my hunger. Up to that time my food on July 3d had consisted of a small, hard piece of bread, which I had been carrying in my knapsack since Münchengrätz. At Bor two musketeers of the Forty-ninth reported to me and I put them in my platoon and kept them until next morning. My wounded servant had meanwhile been taken to Probus, so that I was destitute of the most necessary things, and when night descended, I fell asleep in the midst of the men buzzing about like so many bees and hunting for food. Their pains were in vain, however, as darkness rendered their "expeditions of discovery" difficult, and the men had to content themselves with coffee without anything else. During the first refreshing sleep I was aroused by the two brave Pomeranians; one of them had a steaming pot in his hand, the other raised me up: "Ensign," said the first, "here is something to eat." I was touched by their goodness of heart and gratefully accepted the kind offer, which consisted of rice soup with bacon. I have never forgotten these kind Pomeranians, nor has that night been effaced from my memory. The men, closely crowding together for mutual warmth, were sleeping between numerous small cooking fires; others moved between them like shadows; flaring masses of fire rose in the distance; the air was impregnated with the well-known resinous odor of burning pine; some shots would fall in the wood, and off and on I would hear the groans of the wounded. I rose and walked some distance northward, but the irregular groups of the men soon caused me to cease my wanderings, and I lay down again. I did not wake up until 6, when all were on their feet. The commanders now restored order and regularity; part of the men went for water and food; others were detailed to bury the dead, which I was to superintend.

About 10 a. m. we began to cook what requisitions and provision wagons had furnished; it was mighty little. About noon the officers and delegations of men from the regiments of the 14th Division went to Probus to bury the dead officers in the graveyard of the village, etc. It was an impressive ceremony; all the higher officers were assembled around the graves, and next to them were the corps of officers. Ministers of both denominations pronounced brief funeral sermons; each of us then stepped up to pay the last earthly tribute to the dead, and then we left the village, which now made the impression of total devastation. On our arrival at the camp on the plateau we heard the joyful news that the train had come up with bread, and men were at once sent to draw the rations. But our disappointment was great; the bread was so moldy that it had to be buried at once; rice, peas, coffee, and salt were in insufficient quantities. Fate, however, in such situations frequently opens a wide field to merriment, and jokes on the "hunger campaign," as it was even then justly called, were not lacking.

Standing about in groups, the events of the battle were discussed; every one understood that a victory had been won, but every thoughtful officer realized the total absence of pursuit. I remember Lieutenant Lancelle saying in a very dissatisfied way: "What have we got? nothing but the battle-field." About 2 p. m., I went alone into the wood of Briz to see what kind of a retreat the enemy had made. What I saw defies description: the corpses of men and horses were literally piled in heaps wherever I looked. I started back; the sun shone pleasantly on the otherwise lovely valley of the Elbe. I had hardly rejoined the battalion, when we were ordered to get ready to march. We marched along the western edge of the wood of Briz and saw the entire battle-ground of the 15th Division. In the

clearings between Steinfeld and Stezirek the corpses lay so dense that I cannot remember seeing it worse in the Franco-Prussian War at Mars-la-Tour; the rifles had all been stuck in the ground with the bayonet, as though the victors desired to show the extent of the enemy's defeat, and as the heavy butts were up, the rifles had a slanting position, so that the clearings in the full sense appeared like large hop-fields. Prussians I saw lying about singly; the distance between them and the Saxons and the Austrians of the VIII. Corps averaged 150—200 paces. The men were singing on the march, but at that sight the column became silent; even the higher commander seemed affected, for the battalions made a short halt, as though to give every one an opportunity to observe what losses the repeated offensive of the opponent against the 15th Division had cost him. About 6:30 p. m. we reached the village of Libcan, prettily situated on the mountain slope; the entire valley of the Elbe as far as Königgrätz spread picturesquely before us in the rays of the setting sun, but the hunger would not let us think of anything but eating. At that time Libcan had big cherry orchards, and it was not long before the men were perched in the splendid cherry-trees to the topmost branches; by next morning the trees were entirely bare. Large potato fields were ploughed up, but the potatoes were not bigger than a finger. We did not get bread until we reached Kollin!

II. The Attack of the 19th Half-Division (38th Infantry Brigade) on the Heights of Bruville in the Battle of Vionville on the 16th of August, 1870.

(a) *The March to the Battle-Field.*—At 5:30 a. m. on the 16th of August, the 38th Infantry Brigade, Regiments Nos. 16 and 57, with 2d Light and 2d Heavy Battery,

and with the 2d and 3d companies of pioneers of the X. Army Corps, started from Thiaucourt under General von Schwarzkoppen. According to the History of the 1st Guard Dragoon Regiment, by H. von Rohr, the brigade had been preceded at 4:30 a. m. by the Guard Dragoon Brigade with the horse battery (Planitz). This detachment arrived at St. Hilaire, the common destination of the troops, at 10 a. m.* Count Brandenburg II., the commander, on hearing artillery fire from the east, decided, with the concurrence of General von Schwarzkoppen, to march toward the sound of the guns.† The 1st Guard Dragoon Regiment and the horse battery were alone available for the purpose at the time.

Lieutenant-General von Schwarzkoppen knew before the start from Thiaucourt that a reconnoitering detachment under Lieutenant-Colonel von Caprivi, chief of staff of the X. Army Corps, had been sent out to ascertain the whereabouts of the large bodies of the enemy observed on August 15th, near Vionville, and he might have connected the artillery fire with the reconnaissance. He was personally with the 19th Half-Division,‡ as appears from the statements of Von Rohr and of the 57th Regiment (page 77).

Although it was an intensely hot August day, the infantry marched so smartly that it reached St. Hilaire shortly after 11 a. m. At Woël a rest of 10 minutes was taken, and no other halt was made.§

According to my calculation, the distance from Thiaucourt to St. Hilaire is *at least* 22 kilometers; according to

*Official Account, page 602, I. The cavalry, according to this statement, made 22 kilometers in 5½ hours.

†Text of the Official Account.

‡Page 266 of the History of Regiment No. 16.

§The Official Account, I., page 594, fixes the hour of departure of the 19th Half-Division from Thiaucourt at 7 a. m. The distance

that of the 16th Regiment, 20 kilometers. (See page 266 of the regimental history.)*

from Thiaucourt to Woël is 17 kilometers. As the best infantry can not keep up a faster pace than at the rate of 12 minutes per kilometer, the march to Woël required 3 hours and 34 minutes, including a rest of 10 minutes. The Official Account further states that General von Voigts-Rhetz left Woël at 10 a. m. to ride to the battle-field. As he was in rear of the half-division, the latter must have been past Woël at 10 a. m.; otherwise we should have seen General von Voigts-Rhetz. That alone is sufficient to prove that the 19th Half-Division started from Thiaucourt before 7 a. m. It was not until later that General von Schwarzkoppen learned that General von Voigts-Rhetz had ridden toward the sound of the guns.

Let us compare with this the statements of the 1st Guard Dragoon and of the 16th and 57th Infantry Regiments. On page 124 of the history of the former by Von Rohr it is stated: "The brigade (Brandenburg II.) started at 4:30 a. m. and marched through St. Benoit en Woëvre and Woël to St. Hilaire. The 5th Squadron of the 2d Guard Dragoons (Von Trotha) formed the advance guard. Just as the brigade commander was about to post outposts at St. Hilaire, the sound of guns was heard from the direction of Metz. As it increased every minute, Count von Brandenburg marched toward the sound of the guns with our regiment, Planitz's battery, and with the 4th Squadron (Von Hindenburg) of the 2d Guard Dragoons, which latter was joined by the commander of that regiment, Count Flinckenstein, and sent a message to that effect to General von Schwarzkoppen, with the remark that Trotha's squadron left in the outpost position was at the disposal of the division."

It does not seem probable that the cavalry started two and one-half hours before the infantry. On the other hand, the difference between his statement and that of the Official Account as to the circumstances attending the departure of General von Brandenburg II. for the battle-field is by no means trifling (compare page 602 of the Official Account, I.).

On page 266 of the History of the 16th Regiment we read: "The detachment [the 10th Half-Division, author's note] started from Thiaucourt at 6 a. m. for St. Hilaire, the Fusilier Battalion of the 16th Regiment forming the advance guard, and arrived there about 12 o'clock."

In the History of the 57th Regiment by Von Schimmelmänn, published in 1883, page 77, the hour of departure is stated at 6 a. m., that of the arrival at St. Hilaire as 12 o'clock noon.

*Since August 9th the infantry of the 19th Division had been marching without packs. At St. Ingbert the packs had been loaded on the cars at the railway station under the supervision of an adjutant from each regiment; in the case of the 57th Regiment that duty had devolved on me. The men carried the mess-tins strapped to the rolled overcoat, and the ammunition in the knapsack was transferred to the haversack. According to the calculation in the preceding footnote, the 19th Half-Division must have been past Woël by 10 a. m.

The presumption was that the enemy was retreating to Verdun, in part on the road on which we then were, and on that account there had been some anxiety among the staffs during the march to St. Hilaire. The maps were freely consulted, and the surprise was great when we reached the enemy's line of retreat without seeing a trace of him. The 5 battalions, the 2 batteries, and 2 pioneer companies went into camp southeast of St. Hilaire, the outposts being furnished by F.—57th and Trotha's squadron of the 2d Guard Dragoons. Meanwhile, the tolling of the church-bells in the surrounding country proclaimed the arrival of the enemy. The view was unobstructed as far as the hills of the Meuse, and there was no trace of a breeze. As far back as St. Benoit en Woëvre others had drawn my attention to gun-shots, which I was unable to hear in spite of my best endeavors, and only here in the camp at Woël I was able to distinguish them. I thought the sound came from our right rear. In that case we would have been in rear of the enemy, which no one was disposed to believe. It soon turned out to be a fact.

At St. Hilaire the troops were ordered to cook, despite our vexing situation.* During this time I was with the right flank guard with several other officers, among them Lieutenant-Colonel von Röhl. The officers were listening attentively to the sound of the guns, and thought that we

From there to St. Hilaire the distance is 5 kilometers, which can readily be covered in 1¼ hours. There is no doubt, therefore, that the 38th Brigade reached St. Hilaire earlier than stated in the Official Account and in the histories of the 16th and 57th Regiments. According to the time of the I. Battalion of the 57th Regiment, it was just 11 o'clock. Being adjutant of that battalion, and it being my week to get the orders, on which occasion the watches were daily compared with that of the general staff officer of the division, Major von Scherff, my statements may safely make some claim to relative accuracy.

*The Official Account says nothing about that.

would resume the march at once. This "battle fever" is almost invariably the result of the uncertainty of the troops regarding the plans of the commander-in-chief. It was not so here. Since the morning of the 16th, almost every officer knew the strategic situation *approximately* and the object of our march *exactly*. The conversation had turned on the subject during the march; all were in expectation of a great event and highly surprised to find St. Hilaire unoccupied, although the sound of guns had been heard from the right for some time.

The order to cook, received by the troops not without misgivings, is significant in judging General von Schwarzkoppen's conception of the situation. It showed a purpose to remain at St. Hilaire until further orders should be received; also that the opinion prevailed that there was ample time to cook before the arrival of orders, notwithstanding that the sound of guns had been audible for some time and was getting stronger. It is certainly correct to use every opportunity to cook in order that the troops may not reach their destination in an enfeebled state. But General von Schwarzkoppen had failed to find the enemy where he expected to meet him, and from the right rear he heard continued, severe artillery fire; the enemy must therefore have been engaged at some other point. Unfortunately, we do not know the general's conception of the situation in detail; it suffices that *at that time* he had no idea of what was going on in his rear, that he heard the sound of the guns and *did nothing* to ascertain its cause, neglecting the first duty of a commander who finds that the premises on which an order is based are wrong. In view of the fact that Count Brandenburg had his suspicions as early as 10 a. m., and acted accordingly and sent word to General von Schwarzkoppen, that the former never thought of cooking, but was imbued

with the sole idea of marching to the sound of the guns—it might be supposed that General von Schwarzkoppen should have come to the same conclusion, all the more as Count Brandenburg had shown him the right road, as it were. While the fires were burning, some horsemen came galloping from the east, attracting every one's attention. On the right of the Fifty-seventh, where the view to the right was unobstructed, the men felt so certain of our immediate departure that they were pouring the boiling soup on the ground before it was ordered, and the alarm signal was not given until an officer arrived on a horse covered with foam. The camp-kettles were now emptied and the troops put in march. It was 12 o'clock noon,* our destination was Chambley. We hardly believed our eyes when we found the place on the map.

The order of march was as follows: 4th Squadron of the 2d Guard Dragoons,† Fusilier Battalion of the 16th Regiment,‡ 2d Light Battery X., I.—16th, II.—16th, 2d Heavy Battery X., F.—57th, I.—57th, two pioneer companies X. The II.—57th, with some mounted orderlies from the 4th Squadron of the 2d Guard Dragoons, was left to the north-west of St. Hilaire for the protection of the train.

At this point we will briefly refer to the opinion prevailing at the headquarters of the II. Army regarding the situation on the evening of the 15th. It was believed that

*The Official Account, page 603, I., fixes the time of our departure from St. Hilaire at 12:30; the History of the 16th Regiment (page 266) at "soon after 12:30 p. m."; the History of the 57th leaves the question open.

†One squadron of the regiment had been ordered to report to the commander of the X. Corps, General von Voigts-Rhetz; another had been detached to the brigade division of horse artillery of the X. Corps; the third had gone with Count Brandenburg.

‡At Suzemont F.—16th turned off to the south to establish communication with the remaining portions of the X. Corps by way of Mariaville Ferme.

the hostile army would do its best to get unmolested across the Meuse, and the anticipation of the enemy at that river with the greater part of the II. Army was made the goal of the operations. Orders to that effect were issued from army headquarters at 7 p. m. on August 15th. But the same order assigned to the smaller portion of the II. Army, consisting of the III. and X. Corps and the 6th and 5th Cavalry Divisions, a different direction of march, which implied a certain tactical task. The parts of the II. Army diverged in two principal directions on the 16th of August, the main part westward, the smaller part northward. The object of the latter was to attack a strong hostile rear guard, which it was thought might possibly be on the Metz—Vionville—St. Hilaire road. Subsequently the right wing of the II. Army was to follow the main body westward according to circumstances. In reality, however, something else happened; the smaller right wing of the II. Army encountered the entire hostile army, and the main body, abandoning its original direction, had to be brought up to the right wing. The interesting events connected therewith and their consequences we shall not discuss here. If any one desires to study them in detail, we refer him to the *Militär Wochenblatt*, Nos. 71-78 of 1891; it should be stated, however, that the destination of the III. Corps was Vionville (Mars-la-Tour), and of the X. Corps, St. Hilaire.

A more detailed examination of General von Schwarzkoppen's conception of the situation is here necessary. General von Voigts-Rhetz knew that on the 15th the enemy was still west of Metz; it had been reported among others by the 9th Dragoons from Novéant, and was the cause of the measures presently to be discussed. Army headquarters, corps headquarters, and division headquarters were on the 15th in Pont à Mousson. Here "the en-

emy's plans and our own," as then assumed, were discussed between the Prince and General von Voigts-Rhetz; whether General von Schwarkoppen was present, I do not know. The discussion had reference only to what the Prince learned or assumed of the enemy up to the arrival of instructions from General von Moltke (10:30 p. m.). That was sufficient to direct General von Voigts-Rhetz's attention more to the *north* than to the *west*, since he believed that, owing to the reported presence of the French at Rézonville and Metz, it might become necessary to order the X. Corps to move to the great road somewhat farther to the east of St. Hilaire. It is not to be supposed that General von Voigts-Rhetz withheld from General von Schwarzkoppen the opinion he had formed, and as the latter general, being farthest to the left, would probably have the more difficult task, he should have endeavored from the first to *keep in communication eastward with those troops which had been assigned that direction by General von Voigts-Rhetz, as General von Schwarzkoppen well knew.* Mutual exchange of information is one of the most important duties in the case of several columns, particularly when they were so far separated from each other as here and when the situation itself was so shrouded in doubt. From the beginning of the march General von Schwarzkoppen should have employed for that purpose part of the strong cavalry under his command, and a half-squadron would have sufficed. But that *very essential* was neglected, with the result that one of the main columns was ignorant of the doings of the others. And least of all should that precaution have been neglected after the general heard the sound of guns from the east!

General von Voigts-Rhetz had been directed to reach St. Hilaire—Maizeray with the X. Corps, "bringing up as near as possible the portions of the corps still at Pont à Mous-

son and in the valley of the Moselle." In accomplishing his task and in view of the difference of opinion between himself and the Prince, General von Voigts-Rhetz drew very cleverly out of the dilemma. He sent only the 19th Half-Division and Guard Dragoon Brigade to St. Hilaire, making at the same time a reconnaissance in force against the troops observed at Rézonville on the evening of the 15th (I., 541, Official Account). The 5th Cavalry Division was to make the reconnaissance. Not content with that, he dispatched his chief of staff, Lieutenant-Colonel von Caprivi, with 2 horse batteries and a squadron of the 2d Guard Dragoons from Thiaucourt to Xonville. At Thiaucourt was the 91st Regiment and I.—78th, at Novéant II. and F.—78th, 1st Light Battery, 1st and 3d Squadrons of the 9th Dragoons. Both of these detachments were to assemble at Chambley in support of the reconnaissance; the 20th Division was to follow to Thiaucourt.

Xonville and Chambley are situated 5 kilometers to the southwest and south respectively of Mars-la-Tour, Thiaucourt is about 18 kilometers from Mars-la-Tour, and St. Hilaire is 15 kilometers from Mars-la-Tour; the Chambley—Xonville—Suzemont road is approximately parallel to the St. Benoit—St. Hilaire road, and the distance between them averages about 15 kilometers. In examining the destination of the III. Corps, a point half way between Vionville and Mars-la-Tour, the conception and plan of General von Voigts-Rhetz become quite plain from his dispositions. He meant to *comply* with the Prince's order and at the same time take as much ground to the northwest as possible, so as to be able, in case of necessity, to bring three-quarters of the X. Corps to the support of the III. Corps by the shortest route. In view of the above distances, the dispositions certainly permitted of this for three-quarters of the

corps on the 16th, though it is doubtful whether the 19th Half-Division, etc., would have been able to arrive in time after it once reached St. Hilaire. Since General von Schwarzkoppen knew of these arrangements *before* the march from Thiaucourt, it was incumbent upon him to adhere to this plan. That could be done only by maintaining communication with the Chambley—Xonville—Suze-mont road by cavalry. It may be a matter of dispute whether that was the duty of General von Voigts-Rhetz or of General von Schwarzkoppen. According to my opinion, it was an obvious duty for the latter, since he commanded the column, while General von Voigts-Rhetz merely accompanied it; and the general was very jealous of his prerogatives.

It having been *neglected* to place cavalry between the two roads on which the X. Corps marched, it was the more necessary to take the *proper* steps at the first sign of a *conflict* in the east, as no enemy was in sight at St. Hilaire and vicinity. As *many organs of communication* as possible should have been set in operation before 10 a. m.; first, toward Chambley; second, toward Xonville; and third, even toward Thiaucourt. They would have learned how things were looked at there and what was being done, and would have informed General von Schwarzkoppen. The situation at St. Hilaire being *known*, several orderly officers, officers' patrols, should have been dispatched in these directions, while the general staff officer of the 19th Division should have been sent in the direction of Xonville, where every endeavor should have been made to discover the most important spot, the trail of Lieutenant-Colonel von Caprivi.

The soundness of my propositions is proven by the Official Account (I., 595). 1. Prompted by the artillery fire resounding from the north, General von Kraatz, before

reaching Thiaucourt with the 20th Division at 11:30 a. m., had dispatched officers' patrols northward. The statement points out what General von Schwarzkoppen should have done in the same direction. General von Kraatz then marched his division toward the sound of the guns. So much as regards *reconnaissance*. 2. The detachment of the Seventy-eighth, etc., above referred to, had been at Novéant, whence it was to join the 91st Regiment (minus 1st and 2d Companies), I.—7th, 1st Heavy Battery and 2 squadrons of the 9th Dragoons at Chambley. The leader of the latter employed half a squadron to establish *communication* with the detachment at Novéant; this is an illustration of the *communication* between the marching columns (Official Account, I., 569). 3. The 20th Division was at Thiaucourt at 11:30 a. m. (Official Account, I., 595); Lehmann's detachment (of the 91st, etc.) placed itself at the disposal of the III. Corps as early as 11:45 a. m. (Official Account, I., 569), like wise on account of the *artillery fire* heard at Chambley; the distance thence to Vionville being $6\frac{1}{2}$ kilometers, the rear of Lehmann's detachment was probably still at Chambley at 10 a. m. Had patrols, from the first, been sent out toward Chambley (15 kilometers) to maintain communication, they would have learned that that detachment was continuing its march to the northeast, and General von Schwarzkoppen could have known by 10:30 a. m., that the detachment at Chambley was also marching toward the sound of the guns. Maintenance of communication would have evolved a system of reports from the decisive direction! The order to march to Chambley did not reach the Novéant detachment until it had marched off to follow the 5th Division; when, at Gorze, the leader of the detachment heard continued artillery fire, he also marched toward the battle-field (I., 555). We see thus the leaders along the

whole line deviate from their orders for the day *on their own responsibility and in consequence of their previous measures, spontaneously taken!* 1. Count Braudenburg marches from St. Hilaire at 10 a. m. on account of the artillery fire, when the 19th Half-Division was still a good hour's march in rear (perhaps to the south of Woël); 2. Colonel Lehmann marches about 10 o'clock from Chambley for the same reason; 3. Colonel von Lynker marches even before that hour from Novéant; 4. General von Kraatz marches from Thiaucourt at 11:30 a. m.; 5. Lieutenant-Colonel von Caprivi marches from Nouville; General von Schwarzkoppen was the only one who did not march, although he knew that the enemy was not at St. Hilaire; and as the 19th Half-Division was moreover farthest off the main direction, the necessity to be "*à portée*" was the most pressing in the case of the half-division. It was General von Schwarzkoppen's duty to make the necessary arrangements which were very simple indeed. Even had some of the measures been too late and had they failed to produce the desired effect, still they would have set him right as a leader.

The distance between Mars-la-Tour and St. Hilaire is 15 kilometers; had the 5th Cavalry Division accomplished its task, it might have informed General von Voigts-Rhetz (and Schwarzkoppen) on the road to St. Hilaire not later than 10 a. m. For the Prince at Pont à Mousson received the first report from Vionville from General von Alvensleben at 10:30 a. m., which is about 6 kilometers more than the distance thence to the Thiaucourt—St. Hilaire road. The omission rendered the situation of the 19th Half-Division difficult; it is well known, however, how readily the rendering of the most important reports is forgotten in the heat of battle. From all these reasons I believe that the order to cook, etc., was injudicious, and consider myself

borne out by the fact that the 20th Division, which was in rear and which at Thiancourt was farther from the battle-field than the 19th was at St. Hilaire, did not cook, but marched and sent reports; and in the latter respect the circumspection of its general and the contents of his reports to the army commander may be considered as exemplary.* The general also informed the 19th Division spontaneously of his march to the battle-field. Was there any reciprocal action on the part of the 19th Division toward the 20th? And was not the former with its strong cavalry in a certain sense the guide of the latter?

The destination of the III. Corps was Mars-la-Tour—Vionville, but the French might very well have passed beyond Mars-la-Tour by the time the III. Corps reached the highroad. The action might thus have been taking place at a point less than 15 kilometers away, for it is well known that sound may be very deceptive according to weather and direction of wind.

(b) *Deployment.*—Up to his arrival at Suzemont, the divisional commander intended to take the enemy in flank by way of Ville sur Yron; but, on arriving there, that direction seemed too risky. From our horses we could only see long firing lines and dense clouds of dust, but the severity of the fire, and the wounded of the III. Corps coming toward the approaching half-division, with no very favorable reports of the state of the battle, may have prompted him to seek in the first place to draw nearer to the remainder of the X. Corps, which was quite right.

Among the wounded I recognized Lieutenant Dreising, adjutant of the 52d (?) Regiment; horse and rider were covered with perspiration and dust, and the rider seemed to have

*"Kriegsgeschichtliche Einzelschriften," No. 11, page 661.

had a fall; he was also shot through the leg and his features were almost beyond recognition. As we had been cadets together, I rode up to him and shook hands, making a few remarks, but he rode listlessly on. On asking his servant about the state of the battle, he said, "Bad!" Soon afterward I met another officer of the 20th (?) Regiment, who was shot through the chest. Before I had time to speak, he said: "Well, I hope you will be more lucky than we have been. You will be surprised. This is no cat-killing, as in '66." That did not sound very encouraging, but there was a touch of soldierly humor in his words. These and others, all had taken the road to St. Hilaire. Being struck by that fact, I called the attention of my commander to it, and was ordered by him to deflect the stream, as he called it, of the wounded toward the south. Most of the latter did not quite understand my reason, but the servant of Lieutenant Dreising, a cunning Brandenburger, at once turned his master's horse in that direction and the others followed, so that I was able to resume my place in a few minutes. Fate willed it that Lieutenant Dreising should be my neighbor that night. In the temporary hospital our trousers were probably exchanged by mistake; at any rate, on the next day I had riding trousers with a shot-hole through the calf, while my own were missing, and I was transported to the rear in Dreising's trousers.

The Official Account states, on page 604, that, after deploying for battle at Suzemont, the 4 battalions had resumed their advance on Tronville, and fixes the hour of deployment at 4 p. m.; both statements are in error.

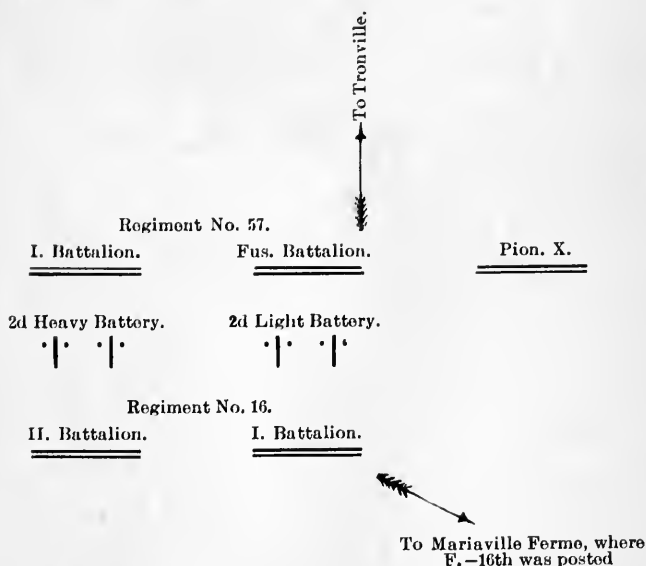
The brigade deployed but once for battle, and that was not at Suzemont, but about 1000 meters southwest of Mars-la-Tour on the left bank of the deep-cut branch of the Yron, on whose steep slope a surgeon of I.—57th, Dr. Josten, fell

with his horse.* As further support for my statement I have a medicine cart, a surgeon, and some hospital assistants; the cart had lost a wheel; the surgeon told me in answer to my inquiry how he had come there, that he had barely escaped some chasseurs, who had attacked his dressing-station. Such incidents furnish good marks for the memory.

The brigade was drawn up facing Tronville,† and, moreover, it was not at Suzemont at 4 p. m. The distance from St. Hilaire to Mars-la-Tour is 15 kilometers; we marched

*During the fall the horse slipped off the bridle, the reins being torn. In his embarrassment, the doctor asked me what to do. I told him to let his horse stay with the broken-down medicine cart mentioned below, which he did.

†Sketch of the deployment of the 19th Half-Division, 1000 meters southwest of Mars-la-Tour.



(Compare sketch page 604, Vol. I.,
of the Official Account.)

without a *single* pause, and must have drawn up southwest of Mars-la-Tour not later than 3:30 p. m.*

From Suzemont, Generals von Schwarzkoppen and von Wedell had ridden forward to inform themselves of the situation and of the terrain. Definite information of the latter could have been obtained, as General Count Brandenburg II. had been on the ridge from Bruville to Ville sur Yron and close to the enemy since noon with 4, and later, with 5 squadrons and a battery. When the enemy's IV. Corps began to deploy on the left of our III. Corps (from St. Marcel to Greyère Ferme), Count Brandenburg was obliged to withdraw to Mars-la-Tour, where he arrived at 3 p. m. It is thus certain that the IV. Corps *arrived on the*

*The Regimental History of the 16th Regiment states, on page 266, as follows: "At 3:30 the brigade drew up near Suzemont on a meadow south of the village, and traversed by a branch of the Yron brook." That agrees with my notes, only Mars-la-Tour should be substituted for Suzemont, as we formed nearer to the former than to the latter.

The Regimental History of the 57th, page 75, approximates my statements more closely, in that it fixes the hour of our formation at 3:45 and locates the place between Mars-la-Tour and Suzemont, south of the great road; on the other hand, its statement that the 16th Regiment was in first line is incorrect, as the 57th Regiment, which had been marching in rear of the 16th, was, much to our surprise, moved to the front through the ranks of the 16th, probably because it was the junior regiment, which the then custom assigned to the first line.

The error of the Official Account at this point is thus explained on page 79 of the History of the 57th Regiment, "*that in the preparation of the Official Account only those official reports were available which were written immediately after the battle, among which that of the 57th Regiment was not sufficiently exhaustive.*" I want to state in this connection that the report written immediately after the battle comprises but about 10 lines, and contains next to nothing; that the "researches of the author" of that regimental history were probably limited to the "Two Brigades," the only available source at the time; and that the description of the Official Account was prepared by the historical section of the general staff, based on the preliminary study of an officer, then a major of the general staff. To be sure, the report of the 57th Regiment was very incomplete, but instead of simply stating these facts, which were probably known not to me alone, and which exonerate the description in the Official Account, the author attempts to whitewash the general staff—at the expense of the innocent regiment, without accomplishing his other object!

line of battle at and after 2 p. m. The general, therefore, was the best authority on the terrain and on the enemy's forces, and must have made reports about them. The 13th Dragoons must likewise have made reports. Whether they were sufficient is an open question, but no reports of that kind reached General von Schwarzkoppen.

After 2 p. m. the German line of battle, which up to that time had extended to the northern edge of the Tronville copse, obliquely across the Gravelotte—Mars-la-Tour—Verdun road, had been pushed back to that road. By 2 p. m. Grenier's division had already occupied Height 846,* and by 2:30 p. m. the northern edge of the Tronville copse;† at 4 o'clock portions of Cissey's division prolonged the line in the direction of Greyère Ferme. Hastening to the front, the 5th Chasseur battalion of Grenier's division occupied the wood to the north of Mars-la-Tour on the angle between the two creeks about 2:30 p. m., and was subsequently joined by the 98th Regiment. Although the French cavalry posted at Ville sur Yron was not very active, it had nevertheless noted the approach of hostile forces in rear of its position (38th Brigade), and had informed General Ladmirault, who then ordered the above movement and hastened to occupy the strong natural position north of Mars-la-Tour.‡

*All references to the terrain are based on the maps of the Official Account.

†The French never had possession of the entire copse of Tronville, but only of its northern portion, and the danger of our being assailed from there was small, as the copse was impassable, or, at any rate, difficult to cross, on account of the dense underbrush. It seems that General Grenier purposely avoided the copse on that account. This will also appear from the subsequent description, inasmuch as one of his brigades took the direction of Mars-la-Tour from the northern edge of the copse, while the 20th Division only encountered small detachments and dispersed men in the brush.

‡Marshal MacMahon had also urged the acceleration of the march.

Height 846 was the strategic point of the battle-field on the left, north of the Vionville—Mars-la-Tour road. It commanded the country in all directions (I have convinced myself of this subsequently), and it lies exactly on the line Flavigny—Vionville—Bois de Tronville—Bruville. Thence the French fired on Mars-la-Tour and had the entire battle-field of the 38th Brigade under fire. Having failed to anticipate the enemy on Height 846, we should never have thought of assaulting it, as failure was certain.

The case of an isolated weak brigade, far out on the enemy's flank, approaching the battle-field on his line of retreat, is so strange that it could not but fill the enemy with apprehension. For the latter, noting the movement from Height 846, had naturally to assume that further forces would come from the same direction and that so far the advanced troops alone were in sight. Placing ourselves in the enemy's situation, we would reach that conclusion solely because any other action on our part would have seemed unintelligible. Without further information, the enemy was not at liberty to assume that a single brigade alone was advancing from that direction. It is necessary to point this out; otherwise *the sudden check of Ladmirault's counter-attack in the battle* at the moment when he was victorious and when he held the fate of the French army in his hands is unintelligible. In addition, the capture of Prussian Guard Dragoons tended to strengthen his belief that the Prussian Guard had arrived. (Compare the statements of Bazaine and von Rohr.)

We cannot close with these remarks. The interesting situation calls for an investigation as to what might have been if General von Schwarzkoppen had more seriously considered the circumstances. Shortly after 11 a. m.* his de-

*All data as to time are based on notes made by himself on that day by order of Lieutenant-Colonel von Röll. When I was

tachment stood at St. Hilaire ready to march; he could have marched. *Was it permissible to march?* Yes, without a doubt, provided he reported his action *at once!* General von Schwarzkoppen had orders to reach St. Hilaire; he approved of the departure of General Count Brandenburg and remained in rear himself at a moment when the general strategic situation had been stripped by the kindling, battle of the obscurity heretofore enshrouding it. If he merely decided to divide his forces, should he not have ordered: "Part of the *cavalry remains here,*" and should he not have led the infantry and artillery without delay toward the sound of the guns? Had there been any demand for the cavalry later, it could have reached Mars-la-Tour by 2 p. m. We are therefore justified in saying that not only the situation, but also the characteristics of the arms were misunderstood, inasmuch as the cavalry was given an infantry task and *vice versa*.

Had General von Schwarzkoppen started at 10 a. m. to march from Woël to Mars-la-Tour on learning that the vicinity of St. Hilaire was free of the enemy, the half-division would *assuredly* have been able to reach the battle-field by 1 p. m., and in that case the seizure of Height 846 would probably have been considered.

(c) *The Battle-Field*.—At 3:30 p. m. the half-division had reached the previously stated point to the southwest of Mars-la-Tour. Our previous description has already given some data on the conformation of the battle-field. In referring the reader to the maps of the Official Account I wish to state that Mars-la-Tour is commanded from the north and

wounded, I dropped the note-book. It bore my name, contained a change of ribbon for my decorations and other marks serving to identify the owner. On policing the battle-field the note-book was found near the body of Lieutenant-Colonel von Röhl and sent to me at the hospital.

west. It was then a miserable village and occupied by a few chasseurs à cheval, who withdrew on our approach. The distance from the Tronville copse to the Mars-la-Tour—Jarny road is 2500 meters; the distance from Height 846—Greyère Ferme to the Mars-la-Tour—Vionville road is the same. A ravine starting on the east of Mars-la-Tour encircles the village on the east and north; opposite the western extremity of the village it turns sharply to the north, and later on bears the name of Yron. About 600 meters south of Greyère Ferme it is joined by another ravine coming from the east from the Bois de Tronville, which encircles that copse on the east and the north and on reaching the northern point of the copse takes a westerly course. Its average distance from the French position (Height 846—Greyère Ferme) is about 650 meters. At the Bois de Tronville the sides, not steep at first, become precipitous, and midway between the copse and Greyère Ferme they are about 12 meters in height, the bottom itself being about 60 meters wide. The configuration of the first of these ravines, the one running to the north, was similar; both were dry and hard on the day of the battle, the bottom of the former somewhat wider, however. The highest point of the French position was Height 846, which falls away to the west to Contour 720. About half way between these points, and obliquely to their connecting line, a road ran from Bruville to Mars-la-Tour, which was joined farther east by a second also oblique road from the same village. Both led obliquely across the ravine in front of the French position. The latter not only commanded the battle-field in this wing, but had in its front a considerable obstacle, which could not be approached *under cover* except from the Tronville copse and from the ravine which runs from south to north. Otherwise the quadrangle, whose side had a length of 2500

meters, offered little cover. The surface has a general inclination to the south as far as the Vionville—Mars-la-Tour road, and then it begins to rise slightly toward the south. Our best line of approach was the ravine which extended northward, but recognizing its importance, General Ladmirault had closed it by the 5th Chasseur Battalion before the arrival of the 38th Brigade. In the angle where the two ravines join was a small copse, which was held by that chasseur battalion; hence a turning of the French position from this otherwise excellent line of approach was impracticable until the copse should be taken. From the (western) road from Bruville to Mars-la-Tour, at a point about 80—100 meters south of the ravine running east and west, an embankment and hedge extended eastward for about 150 meters; this bank of earth was of great importance in the subsequent events. I mention it on that account; it, moreover, formed the only cover available in that whole section north of Contour 780. Not only could this battle-ground not be turned and was devoid of cover, but other obstacles were also subsequently encountered, which the Official Account fails to mention.* The ravine encircling Mars-la-Tour consisted of subdivided meadows, which were fenced in with wire and extended to Contour 780—*i. e.*, from the Mars-la-Tour—Vionville road to the contour; they covered a space of 300 meters. Portions of this ground could not be covered by the enemy's infantry fire, still the cutting of the fences caused a loss of time and checked the movement and brought on the 57th Regiment serious losses from artillery, mitrailleuse, and infantry fire.

These details of the ground were not shown on the general staff map and were unknown to the troops; moreover,

*Mention of them is only made in connection with the charge of the 1st Guard Dragoons; yet it was chiefly the infantry that had been delayed by these obstacles.

the subsequent deployment of the 5 battalions was made so rapidly that there was no time for examining the ground.

All these things *might* have been *known* to the higher leaders, as that entire section had been in our undisputed possession up to 2 p. m.; and we refer not merely to the terrain, but also to the strength of the enemy. But though there was lack of information on the latter point before we were ordered to attack, we could make out the *enemy's masses* along the whole line fairly well with the bare eye just before the attack.

On our side 5 battalions were available, giving not quite 2 men per meter. The battle-ground of these battalions was, moreover, devoid of cover from Contour 780 to Height 846—Greyère Ferme. To vanquish the enemy they had to traverse from Contour 780 to the enemy, 1900 meters of gently sloping ground with a considerable and unknown obstacle along the entire front and with another obstacle along part of the ground. Disaster was certain even if we had to traverse, from Contour 780 to the enemy, 1900 meters. Although the execution of the attack is open to criticism from the theoretical point of view, yet its tactical, and particularly its moral, effect on the enemy was very great, because it was carried out with an energy very rarely equaled since. The vigor of the attack confirmed General Ladmirault's apprehension *that further German forces were approaching from St. Hilaire.** His anxiety for his right riveted General Ladmirault's attention in that direction, and his fear of being assailed there with superior forces kept him from reaping the full benefit of his tactical success. When questioned, however, before the court of in-

*The Official Account, I., p. 601, states this in italics.

quiry, why he had not profited from his success, he answered: "*Pas d'ordres!*"

While the 38th Brigade stood drawn up southwest of Mars-la-Tour, the chaplains addressed the men. The Protestant chaplain, Aebert, who spoke first, selected his words so injudiciously, was so deeply moved himself, and spoke in such a whining way, that no one could be much edified by that sort of "spiritual comfort," and the incident has convinced me that, unless he also manifests soldierly feelings, a chaplain may do more harm than good in such moments, and that in most cases it will be best to keep the chaplains away from the troops altogether. While Chaplain Aebert was speaking, we saw a single rider coming from Tronville at full speed, his surplice fluttering in the air, and as he approached, I recognized him as the Catholic chaplain, Stuckmann, a dear friend of mine since 1866. In front of Colonel von Cranach (1st line) he reigned up like a perfect horseman, the sight of which in itself had a reviving effect, and, after exchanging a few words with the colonel, he rose in his stirrups and spoke in his sharp Westphalian dialect: "Comrades, the III. Corps is engaged in a severe struggle, To you has fallen the duty to save it. Attack therefore the enemy with intrepidity and God will be with you. Amen!" That sounded more like it, and acted like a charm. Immediately afterward the regiments unfurled their colors, the pieces were loaded, and Colonel von Cranach addressed his men about as follows: "You have shown yourselves gallant fellows on the march; show yourselves now the same in battle, and, whatever may happen to you, keep your colors high, so that no Frenchman's hand may touch them. Now with God!"

(d) *Beginning of the Attack.*—Upon the arrival of the 19th and 20th Divisions and of their leaders on the battle-

field, General von Voigts-Rhetz had at his disposal 3 fresh brigades, and, in view of the state of the battle, he thought it incumbent upon him to employ them offensively for the relief of the III. Corps. The arrangements made for the purpose by the X. Corps were as follows: 1. General von Kraatz with 10 fresh battalions was to advance through the copse of Tronville against the height of Bruville, so that, as the battle stood, the frontal attack proper fell to him. 2. General von Schwarzkoppen was to support this frontal attack by an attack in a northeasterly direction (northwest angle of the Tronville copse). It was believed at the headquarters of the X. Corps that this latter attack would take the enemy in flank. 3. Both attacks were to be made in combination. Assuming that an offensive of that kind under existing circumstances was considered proper, the same was well planned by the commander of the X. Corps; for, assuming correct conception and judgment on the part of the leaders of the two movements, the Bois de Tronville offered the safest approach, and had the 10 fresh battalions soon afterward appeared on the northern edge of the copse, Grenier's division would not have been able to take the offensive in the direction of Mars-la-Tour, and would have at least been contained. Within certain limits the 19th Half-Division also had some cover in the Yron ravine. But the success of the two movements depended on the leaders of the two attacking groups; and they should have consulted together. But between the issue of the order on the part of the corps commander and the attack of the 38th Brigade, the situation on the enemy's side changed, inasmuch as the latter considerably extended his line toward the west, so that by continuing to make the northwest angle of the Bois de Tronville its point of attack, the 38th Brigade would be

flanked itself, instead of flanking the enemy. There seems to have been some particular difficulty on that day in regulating a combined attack of large bodies formed near each other, inasmuch as the plan was not only not carried out, but the 10 battalions of the 20th Division withdrew at the very moment when von Wedell's brigade attacked. The contemplated frontal attack failed to materialize altogether, and the isolated attack of the 19th Half-Division resulted. It is not the intention to examine why the combined attack as planned crumbled from the beginning, but the commanding general of the X. Corps as well as the commander of the 19th Division were placed in the most painful situation, for they did not learn the real state of affairs until too late. It is hard to understand how that could have happened had there been the necessary communication between the commanding general and the two division commanders and between the latter themselves; still it may be explained by the fact that at that moment the attention of the commanding general and of the commander of the 19th Division was attracted by movements the enemy was making toward Greyère Ferme. To be sure, a *flank attack* should not be made until the *front* is actively engaged. In that respect General von Schwarzkoppen was left in the lurch, and no blame can attach to him, but still he was not deprived of the possibility of finding out what General von Kraatz was doing.

General von Schwarzkoppen had communicated his intentions to General von Wedell, but the lower officers were not informed at all, and even Colonels von Cranach and von Brixen had merely the general direction pointed out to them. At any rate, such an opportune, exhaustive, mutual consultation as at Popowitz did not take place, and the whole business bore the stamp of *precipitation* and *uncertainty* from the beginning. I know for certain that the battalion

commanders did not know what was expected of them, for Lieutenant-Colonel von Röhl, who was subsequently killed, said sarcastically: "If Stuckmann had not been there, I should have been totally in the dark. What little I know I have learned from the address he made. Stuckmann, it seems to me, is in charge to-day." As General von Wedell and Colonel von Cranach were riding some 50 paces in front of Röhl, I suggested that he make inquiry there. Meanwhile, I.—57th was crossing the ravine about 1000 meters southwest of Mars-la-Tour, whose slopes were so steep in part that order could only be preserved with the greatest difficulty and the two batteries advancing to the left of I.—57th got into a serious predicament. They succeeded, however, in coming from the trot down to a walk and in taking the slopes obliquely; neither battery had an idea of their character. The incident with its comical and serious aspects prevented von Röhl from following my suggestion. As General von Wedell and Colonel von Cranach were watching the passage of the ravine from its eastern edge, Lieutenant-Colonel von Röhl had an opportunity to join them, and I was again in position to observe all measures taken by the superiors up to the divisional commander. I did not hear much, to be sure, but I saw all the more.

Meanwhile, the French had resumed the fire; against whom we did not know, but soon learned. II.—16th was marching from the point of assembly straight on Greyère Ferme, passing by the west of Mars-la-Tour; I.—16th advanced through Mars-la-Tour, and the enemy's increased fire was chiefly meant for these two battalions, which were engaged, when F.—16th, I.—57th, F.—57th, 2 pioneer companies, and the 2 batteries were still south of Mars-la-Tour and west of the great road leading thence to Les Barques. They all passed the village on the east. There was no

such thing as *preparation* by artillery, which took up its first position south of the Mars-la-Tour—Vionville road when the infantry (II. and I.—16th) was already under fire. There was no sign of any selection of a firing position or of any orders for the artillery. It was not until we crossed the Mars-la-Tour—Les Baraques road, which is lined with poplar trees, that we could fairly well make out the enemy's position, which extended from Height 846 to Greyère Ferme. At the same moment a storm of shells was flying about us, an indication that the French had noticed our movement and had been waiting for our appearance. About 200 paces farther on, General von Schwarzkoppen joined the officers above mentioned, and at that moment our batteries opened from their first position. The 38th Brigade here formed a single line from left to right, as follows: II.—16th, I.—16th, F.—16th, I.—57th, F.—57th, and 2 pioneer companies X., F.—16th being somewhat in rear at first (it came from Mariaville Ferme). Up to that time, a moment of decisive importance for *his tactical* dispositions, General von Schwarzkoppen was southeast of Mars-la-Tour. It is an established fact that up to that moment the commanding general of the X. Corps personally directed the left wing of the battle, and that he considered the duty of the X. Corps to be to save the III. Corps from being crushed. Defensive action would not have accomplished the object; it became the duty of tactics to understand the situation and to act accordingly.

The question is: 1. Was General von Schwarzkoppen aware of the general situation? 2. Did he correctly understand his order? 3. Did he make report of the change of the situation on the enemy's side (extension of his right), or did he take steps to meet it? The first will never be known; 2 and 3 are inconsistent with his measures. There is no

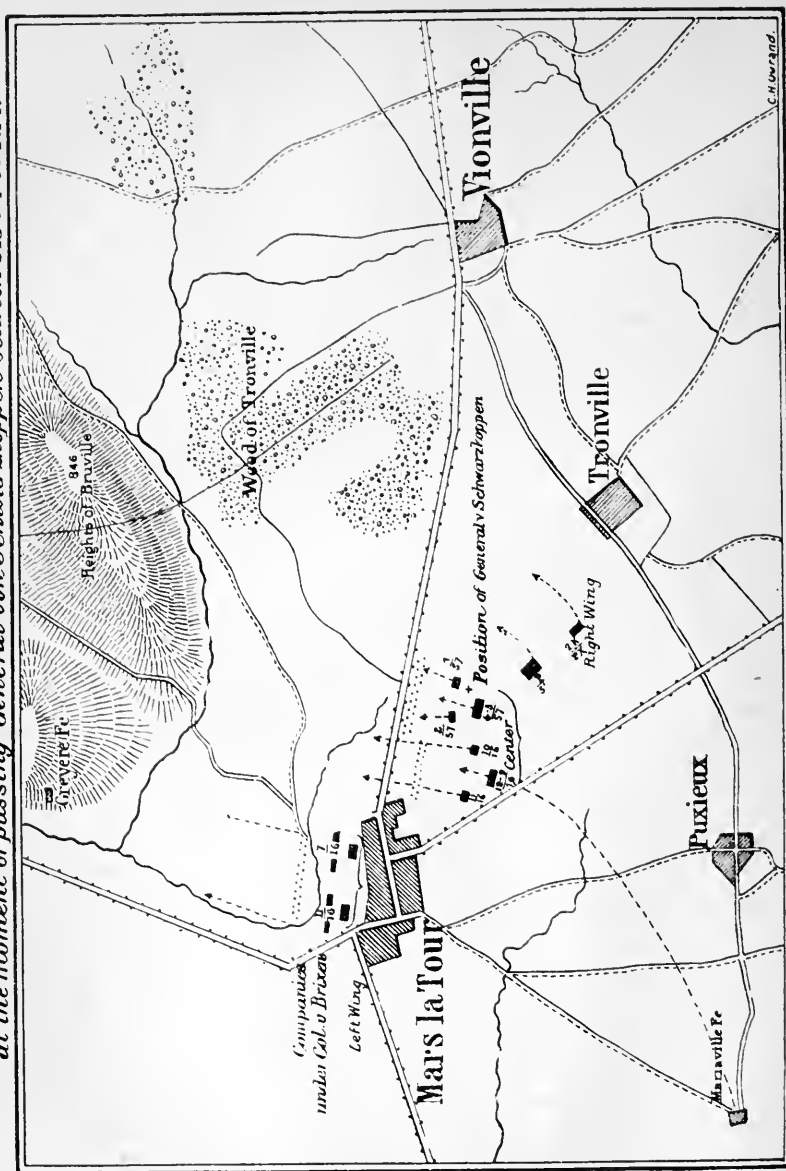
doubt that the commander of the X. Corps had ordered an attack, but, on account of the intervening changes on the enemy's side, it became the duty of the commander of the 19th Half-Division to regulate the attack, so far as concerns the 38th Brigade, according to time and circumstances. It was the duty of the division commander, and it was practicable, to give unmistakable orders how far to advance and what to hold. As regards infantry tactics, General von Schwarzkoppen, wherever he was present, endeavored to have the proper tactical forms employed. It was exactly 4 o'clock* when the brigade started. We had been facing east, as above stated, and the left flank battalion (II.—16th) was nearest to Mars-la-Tour. As that battalion advanced straight from the spot on Greyère, while the companies on the extreme right had to make a wheel of some 2500 meters, *the movement was loose and ragged from the beginning.* II.—16th was firing when the other battalions were just starting, and the general result was a successive arrival of the battalions on the line of battle; and, as the troops, the more they had to take ground to the east, endeavored to make up for the greater distance by a faster pace, this caused precipitation. But, despite the accelerated pace, it was impossible to restore proper uniformity to the movement; the battalions *were defeated in detail from left to right*, and the right reached the enemy's line completely exhausted and at a time when the battalions on the left had already suffered defeat.

(e) *Personal Observations.*—In executing the movement we passed the southwestern edge of Mars-la-Tour, where General von Schwarzkoppen and Major von Scherff were halting mounted in the midst of a severe artillery fire.

*Von Rohr says, page 127, that the 38th Brigade passed Mars-la-Tour at 5 p. m., and fixes the attack of the 1st Guard Dragoons at 5:45 p. m. The former is too late; the latter is correct.



*The 38th Brigade
at the moment of passing General von Schwarzkoppen between 4:15 & 4:30 P.M.*



Sketch II.

Near them, somewhat in rear, were 2 squadrons of the 4th Cuirassiers, which, however, soon turned about and withdrew when the artillery fire increased (see Sketch II.); the 1st Guard Dragoons took their place; Count Brandenburg II. was riding along the Vionville—Mars-la-Tour chaussée.

The troops were rapidly advancing, and when the skirmishers of 1st—57th, with which Lieutenant-Colonel von Röhl was riding, passed General von Schwarzkoppen, the brave general joined him, addressing some cheering words to the troops. When the severity of the mitrailleuse, artillery, and infantry fire from the left front gained an amazing severity, General von Schwarzkoppen remarked to Lieutenant-Colonel von Röhl: "Röhl, deploy strong skirmish lines, and we'll catch them;" and later, "The left shoulder forward a little, toward the angle of the wood," pointing to the northwest angle of the Tronville copse. Meanwhile, 1st—57th had deployed 2 platoons and taken the direction of that angle of the Bois de Tronville, so that it looked as though there was going to be a gap between the 16th and 57th Regiments. General von Schwarzkoppen, who remained for some time with Lieutenant-Colonel von Röhl, then ordered: "Röhl, put a whole company in there." It was done (2d—57th). Soon after, the horse of the captain of that company was killed; the captain, being very short-sighted and pinned to the ground for a little while by the horse, lost the supervision of the company, which was advancing its right shoulder too much. That was due to the direction of the ravine around Mars-la-Tour, into which the men crowded in quest of shelter from the enemy's murderous fire. The 3d platoon connected with the left of the skirmishers of the 1st—57th, and the gap between the Sixteenth and Fifty-seventh was only closed when Lieutenant-Colonel Sannow pushed in F.—16th. Originally F.—16th

was about 150 meters to the rear of 1st and 2d—57th, but, having a shorter wheel to make, the battalion subsequently gained that distance. We anticipate this in order to explain how the line of battle was formed, because, when it halted, the companies of F.—16th were between 1st and 2d—57th, which were deployed.

Outside of these orders from the division commander, none were received by the troops during the action, except the order of retreat. The brigade commander rode northward of Mars-la-Tour, followed by Colonel von Cranach, and as I.—57th was crossing the Mars-la-Tour—Vionville road, both batteries came in position to the north of the village. I will now state what else I heard and saw while in the vicinity of the division commander. Lieutenant Eggeling, from the staff of the commanding general of the X. Corps, was just riding away, when Major von Scherff pointed to the map and, turning to the west, remarked to General von Schwarzkoppen: "That is the 5th Cavalry Division which is going to support the attack on the flank."* At this time the division was trotting past Mars-la-Tour on the south. As I.—57th reached the Vionville—Mars-la-Tour road, I noticed to the right rear the approach of heavy columns (it was the 40th Brigade); soon afterward I noticed some staff to our rear riding on and alongside of the chaussée (Comte Brandenburg II.). Of the line of battle east of the Bois de Tronville nothing whatever could be seen. On reaching the Mars-la-Tour—Vionville road, General von Schwarzkoppen turned his horse and rode back with Major von Scherff.

(f) *Events on the Side of the French.*—Before detail-

*It is to be inferred, therefore, that this officer communicated to General von Schwarzkoppen the intentions of General von Voigts-Rhetz regarding that cavalry division.

ing the course of the attack, I deem it necessary to state how things had developed up to that hour on the enemy's side, according to *present results of historical research*. On receiving orders to join in the battle, General Ladmirault directed Grenier's and Cissey's divisions to turn southward, Grenier in front, Cissey behind him, Legrand's cavalry division bringing up the rear, the artillery reserve between the last two divisions. After the corps had been given the direction of Bruville, the general, hastening to the front with his staff, reconnoitered in person the ground from the Yron to the Bois de Tronville. On arriving at Greyère Ferme he saw the necessity of securely closing the *valleys* (of approach) joining here from the south and east.* He therefore ordered at once:

1. A 12-pounder battery to be brought up, which he posted himself to the *west* of Greyère Ferme so as to sweep the valley to the south. That battery *opened* fire as early as 2 o'clock against the 4 squadrons of the 1st Guard Dragoons then opposite the battery, *killing the horse of Lieutenant von Bismarck,† and continued its fire without interruption as it found objects to fire at.*

2. To secure his flank, General Ladmirault ordered up the 5th Rifle Battalion, and subsequently—

3. The entire 98th Regiment, to the vicinity of Greyère Ferme. These troops, at 2:30 p. m., stood as follows: 5th Rifle Battalion to the west of the valley covered by the battery, and 500 meters to the latter's front (south); the 98th Regiment stood east of the valley and southeast of the battery. After the general had thus posted the troops marching at the head (advance guard) of Grenier's division, the main body came up, which he allowed to continue the

*Bonie, Campagne de 1870, quoted by von Rohr, p. 125.

†Von Rohr, p. 125.

march due south (approximate direction of Tronville). Successful at first in its offensive movement, the division was driven back by the 20th (German.—*Tr.*) Division, and had approximately the following position on the ridge of Bruville before the arrival of General von Schwarzkoppen: Regiment No. 13 deployed as skirmishers, north of the ravine within 200 meters of the great road Bruville—Mars-la-Tour; in its rear and overlapping on the left was the 43d Regiment; farther in rear, back of the right of the 13th Regiment, was the 64th Regiment, extending as far as the great road. On the great road was a mitrailleuse battery, and another battery on Height 846 (both belonging to Grenier's division).

By 3 p. m. the entire artillery of Cisse's division had come forward and had taken up one continuous position west of the great road from Bruville; the 57th and 73d Regiments of Cisse's division are said to have been resting since 2:30 p. m., "north of the ravine of Greyère," removing their packs. The regiments Nos. 1 and 6, the 20th Chasseurs, the artillery reserve, and Legrand's cavalry division were approaching. But 2000 meters north of Greyère Ferme, west of the road to Jarny, 1 regiment of Chasseurs d'Afrique, 1 of Guard Dragoons, and 1 of Guard Lancers had been posted since 2 o'clock. Hence there were quite considerable forces of all arms between the great road from Bruville and the road to Jarny and west of the latter before the arrival of General von Schwarzkoppen. Though they were not directly visible, still artillery and infantry fire had been kept up from Greyère Ferme ever since 2 o'clock, the former being directed against Mars-la-Tour about the time of General von Schwarzkoppen's arrival. Generals von Barby and Count Brandenburg had with-

drawn to Mars-la-Tour *before* that fire, *before* 2 p. m. (Official Account, I., 590, 603).

To give the reader a connected account of the development of the French line of battle, I should state: After 4, and before 5 o'clock p. m., the entire division of Cissey successively joined the first line; first, the 57th Regiment east of, and on, the great road from Bruville; to its right rear the 73d Regiment; they were subsequently joined on the right (west) by the 20th Chasseur battalion and regiments Nos. 1 and 6, the former in first, the latter in second line. I have been unable to ascertain accurately the time when the artillery reserve joined in the action. I have the impression that it was at the time when we were crossing the Vionville—Mars-la-Tour road—*i. e.*, when we were attacking (about 4:30 p. m.); for from that time on the artillery fire became much more severe and we could feel from the detonations that reinforcements must have arrived. All the batteries having suffered losses,* it is evident that the entire artillery reserve took part; in the case of one battery only, 7th—8th (Dick says 9th—8th), no figures are given.

Though it may not have been practicable to observe directly from the German left after 3:30 p. m.† what troops *were* in the vicinity of Greyère Ferme and what was *going on* to the west of the great road from Bruville,* still it could be *seen*: 1, that the entire Bruville ridge was strongly occupied; 2, shots were constantly heard from the vicinity of Greyère Ferme, even artillery fire, which set Mars-la-Tour on fire about 4 p. m.; 3, an immense cloud of dust was visible in the air for a long time over the section north of Greyère Ferme. The atmosphere was clear, pure, and light.

*Dick, page 242-275.

†Standpoint of General von Schwarzkoppen. See sketch.

The immense cloud of dust was the *first* thing to engross our attention on that day, more even than the fire, and was visible *before* we turned off toward the *place of assembly* of the brigade, 1000 meters southwest of Mars-la-Tour. It was our "*point de vue*." As one is in the habit of observing the flight of a balloon, so we followed that cloud of dust around which we were moving in a semicircle. We debated what it might be, and my commander, with his unusually keen eyes, declared that the enormous wall of dust was steadily moving from northeast to southwest. I did not notice any break in it while we were circling around it. On approaching the standpoint of General von Schwarzkoppen, we could see plainly: 1, that the dust cloud *was moving*; and 2. to the *southwest*, exactly toward Greyère Ferme; 3, also that the heights of Bruville were strongly held, and therefore that the cause of that dust-cloud was still *active*. What was that cause? *The movement of large bodies*, which, however, could *not* be discerned *themselves*! But the sight was so striking, (I have never seen the like in my military career), and having plainly before our eyes the heights of Bruville garnished with masses of troops, it was not difficult to foresee that something of importance would soon develop from Greyère Ferme.

(g) *Course of the Attack*.—The arrival of considerable reinforcements on the enemy's side had been noticed since 2 o'clock; active movements were observed in his line at Rézonville (withdrawal of the II. Corps, insertion of the Guard Corps and of a division of the III. Corps), and no diminution of the forces in the center was perceptible. At 2 p. m. it was known on the German side, from captured prisoners, that the II., VI., and Guard Corps were present on the other side. At 3:15

p. m. the length of the French line of battle was almost doubled—from St. Marcel to Greyère Ferme—and the conviction gained ground on the German side that the entire Army of the Rhine was in front of us. On our side 2 army corps, a division, and 2 cavalry divisions could be counted on becoming successively available until late in the *evening*; the enemy's withdrawal had been *prevented*: Flavigny, Vionville, Mars-la-Tour were in our hands; only our left wing had temporarily quitted the Bois de Tronville because outflanked after 2 p. m. by two fresh army corps (III. and IV.).

Between 2 and 3:15 p. m. the situation had been critical, for the enemy might at any moment be expected to advance across the Vionville—Mars-la-Tour road. When these anxious hours *were over*, the 38th Brigade had reached Mars-la-Tour, the enemy having withdrawn from the Bois de Tronville since 3:15 p. m. The left of Grenier's division and some batteries had continued their advance on the west of the Tronville copse until about 3:15 p. m., and until opposite the southern edge of the northern portion of the copse. They withdrew to the position, Height 846—Greyère Ferme, when they met the artillery which had hastened forward in advance of the 20th Division under Colonel von der Goltz. At a point 600 meters north of the Vionville—Mars-la-Tour road, where shortly before the enemy's artillery had been, Colonel von der Goltz took up the battle about 3:30 p. m. Two battalions of the Seventy-ninth were in the Tronville copse, while the remainder of the 20th Division was forming up. The batteries of Colonel von der Goltz were joined by those of the 40th Brigade, so that after 3:30 p. m. he had 24 guns under him west of the Tronville copse. The appearance of these fresh forces in front in connection with the reported approach of German troops from Hannon-

ville against his right flank, and the order from Marshal Bazaine to hold the position, were the causes of Ladmiraalt's defensive. A subsequent offensive on the part of the French, as soon as they should feel strong enough, was not precluded.

General von Voigts-Rhetz decided to take the offensive himself against these new forces, and issued the necessary orders at 3:30 p. m. The general meant the 20th Division to attack in front, the 38th Brigade to attack the enemy's right flank, and the 5th Cavalry Division to act on the extreme left according to circumstances. The commander of the 20th Division misunderstood that order—at any rate, he did not act in accordance with it. For that reason the attack was not carried out as planned, inasmuch as *of the 15 half-battalions ordered to make the attack, 10—those of General von Kraatz of the 20th Division—withdrew in consequence of the misunderstanding at the very minute when General von Schwarzkoppen, agreeably to his directions, had thrown forward the 38th Brigade.*

Prince Frederick Charles left Pont à Mousson on horseback at 2 p. m., and was at Vionville at 4 p. m. (26 kilometers). The commander-in-chief intended to keep on the defensive on his right and to attack the heights of Bruville with his left, X. Army Corps (see Official Account, I., 611), which was in perfect accord with the measures initiated by General von Voigts-Rhetz.

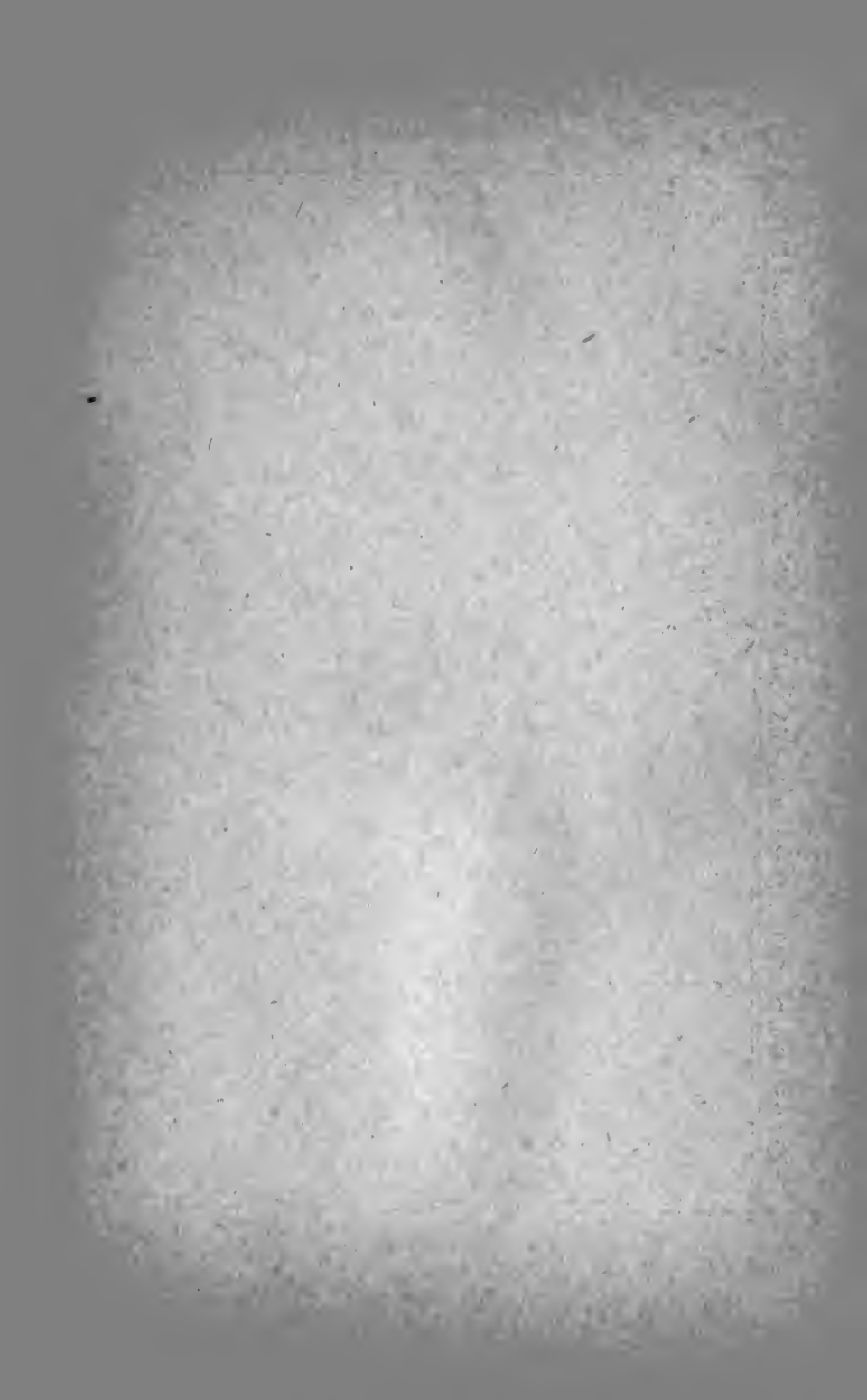
General von Schwarzkoppen had been ordered to support the frontal attack of the 20th Division by a flank attack. The execution had been left to him, and it became his duty to make certain of the coöperation of the 20th Division, by waiting the latter's development, and by keeping a sharp eye on the doings of the enemy. The general's station permitted both of the foregoing to be done, and although the

crisis just passed had been serious, still at this hour, about 4 p. m., there was nothing pressing in the situation; the enemy was rather delaying. Since General von Schwarzkoppen had received the order to attack, the situation on the side of the enemy had been considerably changed (which, however, General von Voigts-Rhetz could not see from his station at Tronville), the French right having been extended to the road to Jarny and advanced to Greyère Ferme. Admitting that General von Schwarzkoppen was unable from his station to gain a sufficient idea of the strength and extent of the French right, still the above mentioned movements on the part of the enemy could hardly have escaped him altogether, and in looking over the wide space between the road to Jarny and the Tronville copse, he should have realized that 5 half-battalions were not sufficient for an attack there, and that if he attacked nevertheless, his front would be too extended and he would be taken in flank himself. Timely representation made under these circumstances would perhaps have caused General von Voigts-Rhetz to modify his order. No such message was sent and—what is much worse—General von Schwarzkoppen did not wait for the deployment of the 20th Division.

For the execution of the attack General von Schwarzkoppen assigned to the right wing (I., F.—57th, 2 pioneer companies), the northwest angle of the Bois de Tronville (Official Account, I., 605); to the left (II., I.—16th), he gave a due north direction toward Greyère Ferme (Official Account, I., 607), whence it becomes plain that, as the brigade was deploying by wings, F.—16th and I.—57th would have to advance in a northeasterly direction between the two wings. These dispositions having been made, the attack was undertaken without obtaining sufficient information of the extent and

strength of the enemy's right wing—a feature that was repeated two days later at St. Privat—though such information should be ascertained before *any* attack; moreover, as the objectives of attack assigned to the wings of the brigade were widely apart, the one being to the north, the other to the northeast, and as the brigade had been formed on the then prescribed maximum front 1000 meters southwest of Mars-la-Tour and facing toward Tronville, scattering and irregular movements became unavoidable, unless front was first taken toward Greyère Ferme and toward the northwest angle of the Bois de Tronville.

That General von Voigts-Rhetz dispatched the 5th Cavalry Division to the vicinity of Ville sur Yron to act against the enemy's right during the contemplated attack of the 3 brigades was probably due to a higher consideration, inasmuch as it sprang from accurate information of the enemy's doings furnished by the latest reports from Barby's brigade. Barby's reports were sent to corps headquarters, and they were probably not, certainly not early enough, communicated to General von Schwarzkoppen. That should be kept well in mind in criticising General von Schwarzkoppen's measures. On the withdrawal of Barby's brigade, General Count Brandenburg "also" withdrew at 3 p. m. in the direction of Mars-la-Tour. The cavalry had therefore been in close touch with the enemy since he had emerged from Donecourt, it had seen well, and had reported; that was 2 hours before the attack of the 38th Brigade, but the proper rules and necessary arrangements for an efficient system of reports, particularly on the flanks, do not seem to have prevailed. Thus it may be explained that General von Schwarzkoppen, who should have been best informed and to whom, as the senior officer present, all reports should have been brought—if merely shown him in



passing—was in fact not in a position to fulfill the rôle that under such circumstances falls to the lot of the senior officer on the tactical and strategical flank. It is one of many instances that go to show the importance of a properly regulated system of reports.

The attack of the troops of the 38th Brigade which were advancing eastward was disjointed, and so was that of the *individual battalions*. I was from beginning to end exactly in the center of the line of battle, mounted, and could see in all directions until the smoke became so dense that II.—16th and I.—16th were hidden from my view; I am therefore an eye-witness.

The individual battalions successively advanced from left to right toward the north and northeast, the two batteries supporting the movement from their (second) position north of Mars-la-Tour. The two left flank battalions, II. and I.—16th, having the shortest road, advanced farthest to the north, crossed the ravine of Bruville, preserved their lead to the end of the action, and may be said to have fought a separate action under Colonel von Brixen. On the right F.—57th and the 2 pioneer companies had to describe the greatest arc, and when we consider that the line which executed the wheel extended as far as the Bois de Tronville and had a length of 2500 meters, it becomes plain that, notwithstanding the acceleration of its march, that wing would arrived on the line of battle *at least half an hour* after the battalions on the left. The supports of the two center battalions (12th and 9th—16th of F.—16th, and 4th and 3d—57th of I.—57th) moved forward exactly on a line, while the skirmishers of 2d—57th became mingled with those of 10th—16th. (See Sketch III.)*

*It was owing to the fact that F.—16th did not reach its place from Mariaville Ferme until 1st and 2d—57th had deployed skirmish-

Beginning at Contour 780, the formation of the brigade from left to right was as follows:

First line: 5th—16th, 7th—16th, 3d—16th, 2d—16th, 11th—16th, 2 platoons of 2d—57th, 10th—16th, 1 platoon of 2d—57th, 3 platoons of 1st—57th as skirmishers as far as the Bois de Tronville.

Second line, 150 meters in rear: 8th, 6th—16th; 4th, 1st—16th; 12th, 9th—16th; 4th, 3d—57th; 11th, 9th—57th; 12th, 10th—57th; 2 P. C. X.

From this point and from the ravine north of Mars-la-Tour the formation was changed as follows, single line being formed everywhere and the second line pushing in wherever it found room:

First line: 5th—16th, 6th—16th,* 7th—16th, 8th—16th,† 4th—16th, 3d—16th, 2d—16th, 11th—16th, 1st—16th, 2 platoons of 2d—57th, 10th—16th, 1 platoon of 2d—57th, 12th, 9th—16th.‡ 1 platoon of 1st—57th, 11th, 9th—57th, 1 platoon of 1st—57th, 12th, 10th—57th, 1 platoon of 1st—57th.

ers south of the Vionville—Mars-la-Tour chaussée by General von Schwarzkoppen's order. F.—16th then advanced exactly between the left of the skirmishers of 1st—57th and the right of 2d—57th and maintained its general direction, thus breaking up I.—57th from the beginning.

*On the maps of the Regimental Histories of the 16th and 57th Regiments, the 5th and 6th Companies of the 16th Regiment are shown too far to the north, near the ravine running east and west. I disputed that in the first edition of this book, and to-day, after repeated research, I repeat that it is wrong, for the 5th French Chasseur Battalion *never ceased to hold* the angle where the two ravines join.

†It is doubtful which of the two companies, 7th or 8th, was on the right: it is of no tactical consequence anyway.

‡This statement agrees with page 271 of the History of the 16th Regiment, but differs materially with regard to the Fusiller Battalion of the regiment. Captain Ohly has confirmed my statement.

While abroad in the fall of 1880, I learned of the impending publication of the History of the 16th Regiment. Knowing that such publications bear an official character, I endeavored to come

Second line, 200 meters to the south: 4th—57th, 3d—57th, 2 P. C. X.

Up to Contour 780 the losses were not very heavy, and while the advance was continued thence to the north, we could distinctly see the advance of a portion—estimated by von Röll at 6 battalions—of Grenier's division in a southerly direction. It moved with great rapidity, in double time, down the slope, and reached the northern edge of the ravine before we had approached to within 80—100 meters of the same from the south. Opposed to this infantry of the enemy was the greater part of F.—16th, I.—57th, F.—57th, 2 pioneer companies, X.

On the other hand, II.—16th and I.—16th found the further edge of the ravine *unoccupied*, as Cisseÿ's division was still on the march between Greyère Ferme and the great road from Bruville to Mars-la-Tour; I could plainly observe the movement from my horse (being with F.—16th and I.—57th). The right and center of the brigade were under severe fire from several tiers (1, from the northern edge of the ravine; 2, from Height 846 to the road Bruville—Mars-la-Tour). The losses increased; we had expected to take the enemy in flank, and now were flanked ourselves from Greyère Ferme (Cisseÿ's division). Three deployed brigades of the enemy were pitted against us at 5 o'clock,

to an understanding with the regiment in order to prevent further incorrect statements by furnishing data based on my extensive researches. It would have been impertinent on my part to inform the regiment directly that such and such statements were incorrect. I therefore asked the regimental commander for answers to several questions which I stated would be important for a tactical study based on that event. I stated at the same time that it was my intention to publish the study in 1881. The regimental commander declined, and simply informed me of the impending appearance of the History of the 16th Regiment, and that I would find in it the answers to my questions. The settlement of doubtful points thus became impracticable.

which, subsequently, were reinforced by half a brigade (of Cissey's division) and 1 *chasseur* battalion (of Grenier's division). Up to this time our opponents were lying flat on the ground, so that nothing was visible except the upturned visors of their headgear, and they covered our detachments on that shelterless ground with a destructive fire. At about 80—100 meters south of the ravine F.—16th, and the line from F.—16th eastward, halted and attempted to reply to the enemy's fire. From that moment the attack flagged; the men lay down, but even then failed to obtain cover; two-thirds of the officers were *hors-de-combat*, and, deprived of its soul, the attack collapsed. The men held out for a little while longer, then the unavoidable happened—they fell back.

The following was the result:

1. The 5 battalions did not make their appearance beyond the ravine of Mars-la-Tour as brave assailants, for, out of the 20 companies, but 8 (1st, 2d, 3d, 4th, 7th, 8th, 11th—16th and 2d—57th) reached its northern edge. The troops of the 16th Regiment opened the action before the center and right as stated, having the shorter distance to cover; they did not find the battle-field so well prepared by the enemy as did the others, and anticipated Cissey's division at the northern edge of the ravine; only when the latter came up in double time were our companies compelled to give way before the enemy's greatly superior numbers.

2. With the exception of these 8 companies, no part of the line got farther north than a point 80—100 meters south of the ravine.

3. Needle-gun and *chassepôt* did not mutually exercise their destructive effect; the destruction fell on us alone.

4. After we had begun to retreat, the French got within 50 to 30 meters of us simply because, concealed

by the dense smoke, they surprised us, and because our infantry was too exhausted to run. On the left of the brigade alone (I. and parts of II.—16th) the French intermingled with our men; hence the 400 prisoners lost by the 16th Regiment.

5. It was only now, on the retreat, that our losses amounted to destruction. Details will be found in the chapter on losses.

As the French line arrived within 150 meters north of Contour 780 the 1st Guard Dragoons appeared and whirled the enemy's infantry down. The latter ran to the rear, masking the front of the French position; they forgot to fire, or fired wildly, and threw away knapsacks and arms. A *general* pause ensued along the entire line of battle; even the artillery was silent; the action seemed ended. The brave horsemen saved many of our men from captivity.

Subsequently the signal "All advance" was heard from the direction of the Tronville copse.* It came from the 20th Division. A few minutes later the 38th Brigade could be seen divided into two groups, one in the angle between the Tronville copse and the Vionville—Mars-la-Tour road, the other 500 meters east of Mars-la-Tour: the former the 57th Regiment, under Major von Medem; the latter the 16th Regiment, under Lieutenant-Colonel Sannow. Six batteries were in action north of the Mars-la-Tour—Vionville road. The above is the course of the action.

To reach the battle-field the 38th Brigade had marched 37 kilometers under an oppressive heat;† still its strength was not all spent.

At a distance of 2500—2000 meters (approximate distance of the Vionville—Mars-la-Tour road from the line

*It may have been 5:45 or 6 p.m.

†The Official Account states the distance as 42 kilometers.

Height 846—Greyère Ferme) one-third of the companies were deployed as skirmishers.* At the beginning the first line was formed of skirmish lines supported by a platoon each. In second line followed, in half-battalion formation, 8th, 6th—16th; 4th, 1st—16th; 12th, 9th—16th; 11th, 9th—57th; 12th, 10th—57th (in company column, two together); while 4th—56th, 3d—57th, 2 pioneer companies, X. followed as individual company columns. When the first line halted 80 or 100 meters south of the ravine, it was joined by the second line. The 4th—57th and 3d—57th were retained lying on the ground in close order 200 meters farther south upon signal from Lieutenant-Colonel von Röhl.†

In the last stage of the action 12th, 9th—16th *were lying down in close order*, 11th, 9th—57th and 12th, 10th—57th *were standing in closed line*; 11th, 9th—57th fired several volleys, after which the advance was resumed, which, 20—30 meters

*General von Schwarzkoppen accompanied the troops on horseback as far as the Mars-la-Tour—Vionville road—i. e., within the zone of infantry fire, remarking repeatedly, "Skirmishers only, gentlemen."

†He did not wish these two companies to slip from his hand, because, as he said, he anticipated bad results from this "chase" and from the disorder. Both companies suffered small losses. (Compare later on with chapter on losses.) In the History of the 57th Regiment, which in other respects has profited much from the first edition of this book, these two companies have been located on the extreme right by the side of I.—57th. The author's error is all the more unintelligible to me as he was with 4th—57th, and I can still see him as he fell when hit by a glancing bullet. I moreover saw both companies on the retreat. Had they been at the spot indicated in that history, and formed as a half-battalion in company columns, their losses would have been treble those they suffered, and something like those of 12th, 10th—57th.

But in addition these two companies, as the action stood, could not have reached that point except by a diagonal movement, *which would have carried them over about 1000 meters of the most exposed part of the entire battle-field*. This statement alone has been sufficient to draw from every practical officer to whom I have mentioned the subject the remark *that it was impossible*. But I saw these things plainly, and the small losses of 4th, 3d—57th constitute additional proof. Aside from the military-historical point of view, such errors are to be deplored as standing in the way of correct conclusions and lessons!

further, brought it up against the advancing masses of the enemy (skirmishers and columns intermingled in one line).

The brigade thus had employed very different formations, "swarms of skirmishers," "closed platoons," "closed company columns," half-battalions "in column" and "in line," and that on *ground of uniform character*. This constituted a tactical error from the moment when Contour 780 was crossed; beyond that line skirmishers should alone have been used, but in those days we had neither an accurate knowledge of the efficiency of the enemy's rifle nor the requisite skill in the fighting of masses of skirmishers.

The regiments of the brigade fought abreast of each other, and on arriving 80—100 meters south of the ravine had crossed 1400 meters under the fire of the enemy's masses; according to the Official Account, they lost 72 officers and 2542 men out of 95 officers and 4546 men which they numbered before the battle. The strength as given is approximately correct; in the case of the losses the figures are incorrect.* There was no lying down or rushes during the advance. Three battalions of the brigade, F.—16th, I.—57th, and F.—57th, advanced in the then much affected "accelerated" step, without pause of any kind, and did not halt until forced by the fire and by the attack of the enemy. Hence the expression "chase" on the part of Lieutenant-Colonel von Röhl, and hence the physical exhaustion when forced to halt. I am unable to state whether II.—16th and I.—16th advanced by lying down and by rushes; I could not always observe them; but I consider that statement to be one of the stories which are wont to be spread as history and by other means in connection with most any event. The 57th Regiment is indebted to the 1st Guard Dragoons for losing but few prisoners and for

*Compare later chapter on losses.

the escape of most of those that had been captured; the 16th Regiment fared worse and lost more than 300 men, mostly from the 2d and 1st battalions, because the charge of the dragoons could have no effect in that quarter. From the right of 3d—57th (extreme limit of their attack to the north and east), the dragoons wheeled to the left and galloped back circling around Mars-la-Tour 250 meters to the north of Contour 780. The material results of the attack were not proportioned to the losses. Lieutenant von Streit, who visited the enemy's position on the next morning, assured me that not 10 French dead were lying north of the ravine which runs east and west. The half-division had had nothing to eat all day.

III. Retrospects.

Of the two attacks which we have undertaken to elucidate after thorough research, the first, in view of the modern state of tactics, can claim historical interest only; its details could not be carried out against an opponent armed with small-caliber rifles,* and what was formerly practicable in the way of tactical leading of large units is barred by the modern rifle with its flat trajectory, long range, and great penetration. The second attack, on the other hand, remains to-day almost the only source from which, by judicious use, we may derive practical laws for the tactics of the future; for that purpose it is necessary, however, to dissect the events under the magnifying-glass, so to speak.

Notwithstanding the difference in the general state of the battle, of the numbers engaged, of the armament, and of the unequal results of the attacks, both have many features in common which provoke instructive reflections.

*Wherever small-caliber rifles are mentioned, smokeless powder is also assumed.

The dissimilarities are to be found in the first place in the objects of the opponents. The object of the defense of the wood of Briz was, and could not be anything else but to cover a retreat *already begun*. At Vionville (Mars-la-Tour), however, the French meant to *hold the field of battle* and to repulse our attacks. At Probus the forces of the defender were about equal to those of the attacker; at Mars-la-Tour they were far superior to ours.

The armament of the Saxon-Austrian infantry was inferior, that of the artillery equal to ours, if not superior, but at Vionville (Mars-la-Tour) the arm of the French infantry was much better than that of the German infantry, while the artillery of the latter excelled that of the French.

The attack on Probus-Bor succeeded; that on the heights of Bruville was the greatest tactical defeat suffered in any attack in the entire war. The conditions were similar at Königsgrätz and Vionville: 1, as regards the *morale* of the Saxons and of the French; 2, as regards their tactical efficiency; and 3, as regards the field of battle. The position in the wood of Briz had been artificially strengthened, but it was not thereby rendered more difficult to assault than was the other by the ravine extending along the front of the French position; and if the obstacles on the latter field are considered—wire fences, which were covered by the enemy's infantry fire—the French position is to be considered stronger than the Austrian.

The attacks of the 14th Division on Probus-Bor and of the 19th Half-Division on the heights of Bruville differ chiefly in respect to the preparations, the deployment, the proper dispositions, and the promulgation in unmistakable form of the object of the action; as regards the leading of large units under the enemy's fire, they are instructive on account of what was done as well as on account of what

was not done. The will to lead and control was the same on both occasions; the skill differed.

I am disinclined to admit as a fact that direction was more difficult at Mars-la-Tour than it was at Probus; though it was more restricted—*i. e.*, in space. The difficulties of leading and control were probably greater at Probus, for there leaders and troops were alike without warlike experience—*i. e.*, practice, and I believe that on that very account the action was directed with the iron strictness, and at the same time with the scrupulousness, characteristic of a peace exercise. At Mars-la-Tour all the leaders and many of the men had war experience. The armed peace from 1866 to 1870 and the manifest desire for war on the part of the French had moreover compelled us to study their tactics, so that a knowledge of them on our part may be assumed. Oral and written instructions issued before the war attest that. It cannot be admitted that we failed to foresee before the collision what was impending and what would be required of the leaders. They knew that on ground devoid of shelter and under destructive infantry fire combined direction was bound to *come to an end*, and that, once that point was reached, the troops would be *out of hand*; if such was the fact, practical success could not be gained *under such circumstances*. If, moreover, the leaders exposed themselves unduly—as was done—for the purpose of compelling success—the loss of the leaders, even of the superior leaders, became unavoidable, which happened, as we know, and nothing could remain of a large body of troops but dead scoriæ, morally and physically broken, without organization, without leaders, and *for the time being* unfit for service.

It is wrong to examine the situation of individual troop units in an abstract way. Frontal attacks against

a well-led enemy promise results only after the superiority of fire has been gained. To-day the decision is the work of the flanks more than ever, and here the action of the Army of the Elbe on July 3, 1866, also forms good illustration. Its march to the field is open to criticism, and in stating that the army was compelled to wind through a defile (Neehanitz) the Official Account is in error.* To adduce proof is quite unnecessary. Still, after the delay of two hours, the excellence of the leading of the Army of the Elbe (14th and 15th Divisions) cannot be denied. The initiative of the subordinate leaders never transgressed beyond the bounds of the fighting-ground of the brigade, and the moment a success had been won, measures were taken to secure it before proceeding further.† We have here numerous measures, none of which was lacking in uniformity and combination of leading. It might be called an ideal case of the task system, but a moment's reflection will show that modern conditions would call for material modifications. Such progressive, systematic, and cautious action lost to the victor great results, to be sure, for there can be no doubt that after the capture of the wood of Briz, the entire 28th Brigade might have advanced on Briz and Rosnitz, if the 16th Division had followed the 14th by the shortest route through Problus and Rosnitz, instead of making a long detour and getting stuck, and if the 15th Division had been put in motion in the same direction, which was not at all impracticable. That would have resulted in a catastrophe to the Austrians on the field of battle. One of the

*Page 399, II., Official Account of 1866.

†Seizure of the crossing at Neehanitz, capture of Neehanitz, and Lubno, occupation of the wood and ridge of Popowitz, of the wood of Ober-Prim, of the villages of Neu- and Nieder-Prim, of the pheasantry of Jehlitz, of Stezilrek, Steinfeld, Ober-Prim, Problus, height of Problus, wood of Briz, and farmstead of Bor.

chief reasons why things did not take such a turn was General von Herwarth's failure to have the requisite bridges built at the proper time. But even as matters actually stood, the main forces, 3 divisions of the Army of the Elbe, would have reached the Austrian line of retreat sufficiently early, if the commander of the 16th Division had resolutely followed the direction of Probus. The division would certainly have been joined by the troops at that village and in the vicinity, as they felt themselves morally and physically equal to it, and the situation *demand*ed the movement. That was well recognized by the 14th Division. Here, however, we have the case of General von Etzel, which resembles that of General von Kraatz at Vionville. In order to see the connection of things, it is necessary to lay bare the causes without sparing; otherwise we fail to arrive at history or at correct deductions, or to gain anything useful. Moreover, the entire cavalry should have been at Charbusitz, which was likewise practicable.

The fact that we confronted an opponent whom we never had overcome in a great battle, and whose efficiency we respected, accounts for these cautious tactics; they required the presence of the highest leaders at the decisive points. In that respect the attack of the 14th Division again furnishes a model.

Subsequent history has demonstrated how easily the modern fire fight may degenerate into an action of numerous companies and smaller bodies impelled forward by the more bold than enlightened initiative of their officers. We have had to experience the mischievous side of such individualized combat but rarely and in a limited way, but the question of what will result when the individualized conflict ends in defeat is most uncomfortable. The question might have been answered by the battles of Vionville on August 16th, and of

Loigny on December 2, 1870, had not the enemy been possessed of such unlimited short-sightedness.

IV. *Tactics at Probus-Bor on July 3, 1866.*

On July 3, 1866, we behold an entire division on difficult ground and never for a moment slipping from the grasp of its commander from beginning to end of the action; everything was regulated, and whatever did creep in was at once subjected to control. In the attack, long skirmish lines followed by small supports alternated with the double column on the center (Fusilier Battalion 57th, II. and I. Battalion 17th). At the key-point of the enemy's position, one battalion (F.—56th) suffered losses equal to those suffered in 1870 at the hands of Imperial French troops armed with breechloaders, and although deprived of its leaders, it carried the obstinately defended village by assault. Immediately after the successful assault the first care was for the defense of the captured point. The disordered swarms were re-formed. Everywhere the division and brigade generals were active in the first line, gave their orders there in person, and spurred on the troops. The battalions were re-formed in a very short space of time, and every cover was carefully utilized to minimize the losses. In that way an entire division remained in the hands of one man all the time and throughout the several hours of a difficult attack; he always knew where the tactical units (battalions) were. It was the beautiful ideal of a large movement in attack, carried out with a perfection probably never seen on any other occasion.

Not only did the officers throughout the military hierarchy, each in his place, *keep their troops in hand*, but there was at the same time no neglect of the second great tactical law of *keeping the troops in motion as long as possible* and of de-

laying the fire until it promised good results. The action of the entire 14th Division as it was would have been impossible had not *time and circumstances* been utilized before the battle in the manner in which they actually were. The first requisites for any tactical success are *correct* disposition, *correct* direction, undisturbed posting of the individual, principal units (brigades) beyond the enemy's fire; and, after the completion of the deployment from the marching column, resolute and uniform advance to the attack. These preparations are not the least instrumental in securing success, and we attach the greater importance to them in the attack because all were not sufficiently respected in the attack of the 38th Brigade on August 16, 1870, and because plan, disposition, and deployment are rendered more difficult by smokeless powder and long-range rifles. Generals and general staff officers had spent the forenoon of July 3d in familiarizing themselves with the battle-ground; to be sure, they had more time than on August 16, 1870. After the tactical bodies had been directed into their courses, the most important law on which all tactics are based, that of human nature, was strictly observed. The march was not stopped at the edge of the zone of fire, but continued within the same, without, however, losing control of the troops. The first halt in the attack of the 28th Brigade being made within 250 meters of the enemy's abattis. Up to that time the resistance of two Saxon battalions on the edge of the height south of Probus had to be overcome, and the rows of dead Saxons bore witness to the efficiency of our infantry fire. The height of Probus commanded the entire field which the 28th Brigade had to cross, and in front of the abattis of the wood of Briz the ground was devoid of any cover for 300 meters. That we were able to advance so far without check was due to

the enemy's armament, to the tactical forms employed by the assailant, to the unequal distribution of the defender's forces,* and to the uniformity, celerity, and vigor of our movements.

Psychological Matters.—The great Frederick overcame the armies of half of Europe, not only because of his great personal military superiority, but also because his tactics, their nature, and the appropriateness with which he applied them, rested on a sound basis, on a knowledge of human nature. Where he deviated therefrom, as at Kollin, his grenadiers, notwithstanding their iron discipline, vanished as did the 38th Brigade at Mars-la-Tour. The great king and leader was a psychologist, and expressed himself in that direction as unreservedly as in all other directions. Hence his continued success. When his army was already imbued with the confident military spirit which generals spread, the great king in his secret instructions to his generals wrote as follows: "The average Prussian soldier is indolent"†—i. e., he does little or nothing of his own accord, he has to be driven. The great king never forgot that no one likes to die, and that natural egotism strives for the longest possible preservation of life and shuns mortal danger, and his words may still be applied to many of our men. In taking notice of this fact we gain an approximately correct idea of what may be expected of the man in the way of self-sacrifice, and how much remains to be accomplished by discipline and by the personal example of the officers. This knowledge will assist us in devising suitable forms by which we can make use of the indolent individuals. There is an anecdote

*F.—57th, for instance, hardly met with any resistance, so that it would seem that the enemy had withdrawn from that point, while I.—57th as well as I. and II.—17th encountered obstinate resistance.

†"The General Principles of War," instructions by Frederick the Great after the second Silesian war.

which, like many others, characterizes the lack of susceptibility of our men, and I quote it as showing that beautiful words and fervent speeches frequently are lost on them. A commander of the Pomeranian Cuirassier Regiment, in proud remembrance of the past achievements of the regiment, is said to have begun his address as follows: "Cuirassiers, Hohenfriedberg Cuirassiers," etc. The words sounded strange, and through the ranks of the armored horsemen passed a whisper: "What 's that? We are Pasewalk Cuirassiers!"*

Many of our men are impressed by one thing only, by deed. Hence, the great king rewarded on the spot every daring deed, every bold resolve, in order to spur ambition and exercise a direct influence on the masses through the zeal and heroism of the officers. Success in the great king's attacks rested on the conviction that any check in the attack movement was equal to a failure of the attack. Hence he did not create artificial rest- and breathing-spells, but endeavored to *avoid* them, and tactics culminated in the cultivation of that sense of honor of the officers which is our particular strength, and in the development of their will-power.

That constituted their training. The moral effect of fire is, as a rule, more destructive than the material effect; this is still more the case to-day in consequence of the small-caliber rifles, and particularly of the new projectiles (improved shrapnel, torpedo shells), than formerly; and in the purely theoretical sense those tactics ought to be the best in which the moral force of the leaders is most effectively manifested. But the attack on decisive points was as bloody under the linear tactics of Frederick as at the time of Napoleon's column tactics, and in the more recent past,

*The regiment was quartered in Pasewalk.—*Tr.*

which partakes of both. The great king's tactics were based on discipline as strict as that of the Romans, and his generals were heroes like the generals of old Rome. Movement and fire effect were intimately connected, the soldier fired by command; the ranks were kept closed as much as possible; fire was opened at short range (about 200 paces), and with a heretofore unknown intensity and rapidity; and that which the great king accomplished by closing on the enemy with as many muskets as possible, and then shaking him by fire *regulated by command*, constitutes to-day the aim of many tacticians; compare the "Summer Night's Dream."* It is a significant fact that in the case of every large attack heavy losses were reckoned with from the beginning, and that the will to be the first in the hostile ranks and the last to withdraw was systematically cultivated. The bold spirit of the attack of the Prussian Army is the gift of the great king, and should be fostered particularly on account of the modern arms. The tactics of the great king took account of the weakness of human nature, were in keeping with time and circumstances, and were healthy. We, on the other hand, take no account, or too little account, of human egotism, and look upon man as part of some splendid mechanism and expect him to act with the same precision, instead of giving due consideration to the failings of human nature. Meckel and his followers represent one extreme with impossible demands on the preservation of closed "firing machines," and their opponents represent another extreme with impossible demands on the morale of the men, such as the majority of them are. There the closed "firing machine"—i. e., the officer—is expected to do everything; here demands are made on the man such as will be fulfilled only in an army of heroes, in the belief that

*Berlin, E. S. Mittler & Son, 1887.

the mind would replace the soul, and intelligence, courage.

Of all the levers, egotism alone never ceases to operate; it suppresses the other forces in the case of most men when in great danger; and if self-preservation is habitually looked upon as the most natural aim, while the leader, on the other hand, must at all times insist on the highest personal sacrifice, that of the man's life, this existing and permanent *antagonism* should prompt us to lay our stress on the cultivation of moral force and intelligence, and to endeavor to retain or regain the command and control of men, so that the leader may be able to lead his men and may be held *accountable* for the fulfillment of his duty. The requisite conditions, contempt of death and heroism, will-power and zeal, determination and discipline of the spirit, can be found in satisfactory quality only among professional soldiers; not among hirelings, and only in a corps of officers which, wherever it may be, makes intelligence and moral force and unswerving sense of duty its aim, and which is burning with an *exalted ambition*, the ambition of devotion to the common weal, to king, fatherland, and nation, to all the ideals which fill the breast of the man of superior education, of superior moral strength and of noble views of life, which make a man of the officer and exalt him. These *moral* forces will ever be intrinsic properties of healthy tactics, but they do not develop their beneficent effects until the individual is sufficiently advanced in years to comprehend the meaning of the term *responsibility*. Responsibility in itself compels reflection and *labor*, generates a moral conception of the profession, a sense of duty, a love for one's own goal, and inspires men who are appointed to act with courage, provided they possess inner worth, faith, and confidence. Weak men invariably shun responsibility; instead of disclosing and stimulating their determination, responsibility

does not manifest itself in such men at all. It is requisite, therefore, that among men whose *intellectual powers are expected to operate consciously in great danger and under great responsibility*, the strengthening of the character be made the basis for everything else; and although unusual strength of character is, as a rule, an inherited gift, yet it may be *imparted* to a certain degree to *all well-disposed men* by sensible training; chiefly by the citation of fine examples of deeds of devotion and self-sacrifice, by assigning a conspicuous place to the ethic-moral principle in the theory of life and in education, by the *exercise of abstinence and of renunciation of the pleasures of life*, by an *introspective mode of life*, by the acquirement of love for *work*, which of all is the only lasting pleasure on earth. Legitimate and moral egotism is not debarred by such a theory of life from having a strong, material aspect, which is fortunate, since everything, in order to be sound, should have a moral and a material side. The sense of duty and consciousness of responsibility together are the chief levers stimulating the intellectual powers, for it is only under the agency of *the sense of responsibility* that one works seriously. Responsibility teaches *reflection!* Acute thinking, if continuous, is the greatest strain that can be imposed on man. Its effect is strengthening, not weakening; for it becomes indispensable to the brain, which forces the material substance to follow, even though the miserable body be struggling against it. Responsibility also engenders the *proper sense of shame*, which constitutes a powerful lever in overcoming moments of weakness. I have seen men who succumbed in such moments, and have convinced myself in the course of association that they were men devoid of innate worth, or possessing it only to a small degree, but who, in the absence of the true sense of shame, were all the more haughty. *Culture en-*

genders modesty, lack of culture arrogance; and though, in thinking of the many dangerous situations in which I have been, I can by no means deny a creeping sensation, I have in every case inwardly rejoiced to have overcome the weakness and to have risen superior to the lower instincts inborn in man; and I am free to state that I *invariably rose superior*, without asserting that I am naturally and unusually brave. In inquiring what made me invariably rise superior to myself, I find in the main two forces: intellect, and through it duty; responsibility, and through it shame. I have made a psychological study of myself in order to render an honest account to myself in every instance as to how my heart stood, whether I retained control of my mental powers, etc. I considered it a discipline of intrinsic attraction to *me*, and have made the discovery, that progress therein is toilsome, that it *frequently* has to be begun over again, and *that the goal cannot be reached unless the mind has previously been trained to work*. I therefore think less of the "smartness (*Schneid*) of youth," though it frequently leads to fine results, than I do of that of the more mature age, because the latter implies greater development of the mental powers; the smartness of youth and the will-power of women frequently resemble each other. Human nature, however, easily defies far-reaching theories; the more developed mind of mature years should, therefore, never be in doubt as to what it wants—what is reasonable, in order not to ruin the buds of youth before they unfold into blossoms. I could almost wish again, in my more advanced age, to see a war with man-killing battles for the sole purpose of comparing my own self of these years with that of my youth. In no danger did I ever consider myself more than a fair average, but I have seen many officers above this average, and some below; among the former were those for whom I could not suppress my admira-

tion, and I must add that many soldiers have also excited my admiration, and these brave men I place above the best of the officers. I cannot say that I ever felt hatred, or that hope of reward was much of a spur to me; on the other hand, an understanding of the situation, keeping my eyes and ears open, observing the action of my peace-time acquaintances, that of our own troops, and of the enemy, etc., has had a greater attraction, for to me man has ever been and is most instructive; I found that man changes more or less, not excepting those whom I ought not hesitate to consider as endowed by Nature with the essential gifts of the hero.

Since I am an average man, who, nevertheless, remained master of his intellect in serious, staggering situations, it ought to prove, that by means of careful education and training the same average measure of moral strength may be produced in the case of all men who are *not degenerated*—officers as well as men—particularly so in the case of officers; and it would be right to administer *inexorable punishment whenever that average fails to materialize*. In this respect, however, we seem to have become very indulgent; great victories have induced a disposition to leniency. This is of doubtful expediency, and may lead to evil consequences. In order to avoid sensation and publicity, many things have been covered with the veil of charity; this may be *political*, but it is not *military*. Even in the case of people of superior order, the effect of *shame* on their actions should not be underrated. Shame was a powerful stimulus in the rising of 1813. Shame then spurred the officers to the highest human efforts—shame over the defeats suffered, shame over the lost position in the state, in society, and in the intellectual world. Shame presupposes contemporaneous society and a certain relation between the same and the individual. If the contemporaries

remain in ignorance of shameful deeds, their noble impulses will not be roused to action, and it was the recognition of the necessity of this action that prompted the great Romans to adopt their punitive measures. Again, if a member of a community has the comforting knowledge that nothing will penetrate beyond the four walls, such knowledge may be instrumental in stunting the sense of shame, the sense of responsibility, etc. Publicity, like everything else, has its disadvantages; but, as war constitutes an act in which all passions and forces of the individual are publicly manifested, punishments should be made public no less than rewards. And in the case of men who are not degenerate fear of punishment is a much more effective means than hope of reward.

I have observed that those who were conscious that I knew of some weakness they had shown were ashamed, no matter how often they had done the utmost of which human nature is capable; I have known others who avoided me on that account, who could no longer look straight into my eyes. Shame is invariably the lever, and it should therefore be utilized.

If an army is composed of the dregs of society, the officer with his moral qualities is *everything*, his men are in reality nothing but a shooting-machine in battle; and whenever the battle has gone against them, these machines have collapsed, even under Frederick, since the parts of the disordered machine have run so far that they could not be gotten back under fire. Frederick himself has bequeathed to us much classic testimony in this particular. When, however, the army represents the sum of the nation's strength, as is the case to-day, the distance between officers and men as regards their qualities naturally becomes less; and nothing is gained by the rod and other means, which

formerly served their purpose. The greater respect for the officers should therefore be inspired by their higher intellectual level, the road to which should be prepared with clearness and directness. The presence of the most ideal class of enlisted men in a national army, however, cannot extinguish the moral differences between officers and men; it can merely modify them. Tacticians are wrong, therefore, in resuscitating the forms of Frederick or those of the attack of the 14th Division at Probus-Bor (though it otherwise stands as a model in military annals) as the only means for controlling the forces, necessary for a decision, in the act of advancing on the enemy; but it is no less wrong to renounce at once all forms on the battle-field, and leave the man to his own devices, because that *puts leading out of the question altogether*, and because most men will not advance sufficiently close if left to themselves from the beginning. The days of closed formations in the execution of the attack are over, and probably no one believes in their practicability to-day. Every important action is bound to be a conflict of masses of skirmishers, and it only remains to determine whether, in the application of this correct principle, the proper means have been adopted. Fighting in masses of skirmishers restricts the authority of the leaders; and the disorder thereby rendered unavoidable threatens to destroy it entirely. Officers from the captain down should be particularly impressed with this fact. It will not be practicable to eradicate the evil completely, but reasonable steps should be taken to minimize it. The proper means will be found in suitable tactics, in the moral training of the soldier, in the efficiency of the officers, and in the greatest possible number of subalterns and non-commissioned officers. Modern tactics require more subalterns and non-commis-

sioned officers than formerly, but this very essential is impossible with our modern mass-armies.

V. *The Tactics at Mars-la-Tour on August 16, 1870.*

(a) *Psychological Matters.*—Before analyzing the action of the 38th Brigade, I ask the reader to return with me to the description which I have given.

The work is not very cheerful, but it is indispensable in order to gain correct ideas and, *perhaps*, no less correct deductions. The circumstances antecedent to the action of the brigade and the psychical and physical condition of the men will also have to be considered, since the tension of the spirit in most men of the lowlier kind is dependent on the physical condition of the body.

The 38th Brigade had marched from Bingen to Pont à Mousson in ten days, and had stood the fatigues well despite the heat. During the march news of victories arrived from right and left, and the men were looking forward to an encounter with the enemy with the greatest confidence. I dislike the term "burning with eagerness," since it constitutes simply a falsification of human nature, which would rather preserve life than sacrifice it. But in this case Napoleon's wicked declaration of war had affronted king and nation; there was but one opinion and one sentiment as to the king's resentment of the neighbors' insolent presumption, and what was then imbuing the German soldiers was *ardent love of country* and fervent patriotism—in one word, passion. The individuals therefore exerted their strength spontaneously, and their splendid marching and good behavior in battle constitute a fine field for inquiry as to how far offended political honor may affect the *morale* of troops in battle.

The cause of the general had become that of the sol-

dier, the cause of the nation that of the army, producing a degree of most intimate and passionate fusion, the equal of which is rarely shown by the psychology of war, even in its fortunate periods. The course of events nevertheless shows what passion *may accomplish* and what it *may not*, and it may well warn us not to place too high expectations on it. The battalions of the 38th Brigade reached the battle-field of the 16th of August with an average strength of 900 men—truly a splendid feat.* In comparing therewith the high percentage of losses from sickness and infirmity customary on marches in peace and in war, it becomes plain that here will-power was the underlying cause: the will-power of the individual, and thus of the army, withstood fatigues and night marches, and insufficiency and irregularity of food.

With the thousand kinds of danger, however, in which the life of the individual is directly threatened and where the individual *remains constantly* under the impression of such danger, battle requires a much higher degree of will-power. While it manifests itself on the march in dogged perseverance, here it calls for buoyancy and heroism, and frequently the same man who has marched until ready to drop *cannot be gotten from behind sheltering cover* by word or whistle, order or command, or even the repeated and heroic example of the officer, to advance again over the fire-swept space; and the same non-commissioned officer who through a long term of service has enjoyed the reputation of being a brave soldier, and has returned from some other war decorated with the outward signs of his bravery, who is expected to possess superior *morale*, and who is appointed to the honorable duty of holding on high the symbol of

*According to the History of the 57th Regiment, the two battalions of the Fifty-seventh numbered 31 officers and 1825 men as they entered the battle (page 88), which agrees with the figures I gave in the first edition.

military fidelity and all military virtues, will lie down with the colors when the officer's watchful eye is not, or can be no longer, on him, and then only does the sacred emblem wave over the field when the command "Colors on high" recalls the bearer temporarily to his duty. Such is man and such also is the soldier. Fear of death changes most of them completely, and *superior* men themselves may succumb to it.

Whoever leads troops must know men, and the officer who orders them into battle should never forget that the measure he applies to himself is applicable to but few of his men. Nor should he forget that will-power, devotion, courage, and bravery do not invariably act in the same degree in an otherwise resolute man. Various phenomena and sentiments, bodily and mental dispositions, will impair the soul's strength; never will it be to-day as it was yesterday, and to-morrow it will be different from what it is to-day. The resolution to die a great and noble, calm and heroic death marks that moment when man exalts himself to the highest efficiency, but it is not the *normal condition* of psychical life. In studying psychology in tactics we can not figure with known quantities, since psychical quantities differ as much as do men and vary in each of them every moment. The same deed that I perform to-day resolutely and unhesitatingly may at some other moment find me less prepared and ready. The same is the case with the majority of officers, and he who surpasses this measure is an extraordinary man; he has stripped himself of humanity; he is great. Fanatic will and ethical will accomplish practically the same results. The latter exalts man above human nature; while the former imbues him with an enthusiasm which carries him to the limits of human achievement.

In an army we have no use for fanaticism on account of

its endless dangers to discipline; but moral force is the most precious substance of healthy tactics, and at the same time the most sensitive.

But here, too, provision has been made in order that man may not outdo himself.

We can never reach the ideal of the will-power, as we construct it at the desk. But the reader will hardly contradict me when I say that the troops of the 28th Brigade marched into battle with all the noble and holy purposes which it is possible to develop in the masses. Even more, they were ripe for the psychological moment; that happy state, however, will ever remain an exception to the rule. To be a judge of this, one must have lived and suffered with the troops, and have observed and studied them. Our troops were under the influence of everything that inspires and stimulates soldiers: fervent devotion to the motives of the war, emulation of other victorious troops. The conflict was entered into in a spirit of emulation in wiping out an injury received, and even the uneducated had a vague idea that it was not a question of idle military glory, but a national struggle for the honor and unity of the fatherland. All this should be kept in mind. Did all these noble incentives prevent the brigade from giving way? did they suffice to stimulate the men even to defense—to self-defense, after the brigade had given way? No! Will-power, too, has a limit, which should be a source of reflection to the officer, because that limit is bound to differ according to motive, efforts, and impressions. Battle culminates in a physical, forcible act, differing from what it used to be in this, that to-day fire is opened at greater distances, and that a greater number of missiles will hit the target in a given time. On that account the effect of the battle is greater in its moral as well as in its material aspect, and the officer should be familiar

with it, because it will enable him as a leader to give sensible orders.

I do not hesitate to acknowledge that the fire at Mars-la-Tour affected my nerves for months. Troops exposed to anything similar are demoralized for some time—the officers as well as the men; nor am I alone in holding this opinion. General Skobelev, whose force and rare personal courage no unbiased mind will deny, said after the third battle of Plevna: “We have made the assault and taken the enemy’s works, but the assault has cost us less than the retreat. The terrible fire has demoralized officers and men. It should be well considered whether the prize is worth such exhaustion. Demoralization is infectious, even in the best army.” Yet the losses of his troops did not equal those of the 38th Brigade at Mars-la-Tour. Serious, thinking men will not gainsay what I assert, since they know themselves and human nature and judge its failings leniently; narrow, vain minds will oppose it, and to attempt to convince them would be to carry owls to Athens. Courage not based on transcendental convictions will soon pale. It is said that before going to the war, Skobelev consulted a fortune-teller, and that she prophesied that he would escape all danger unscathed; that from that time on he wore a talisman in which he reposed implicit faith. It would not be the first of such instances. Trajan, one of the finest and most heroic personages in the annals of war, did the same. Their opponents may call it weak, superstitious, unworthy, and unchristian, and so it may be, but the warrior’s Psyche has nothing in common with the *word*; whence she derives her strength is immaterial to the cause, so long as she is there and is of the moral kind.

(b) *Remarks on the Battle-Field and on the Enemy’s Forces.*

—Of the line of battle of the X. and III. Corps east of

Mars-la-Tour nothing was visible except four batteries, which were in action north of the Mars-la-Tour—Vionville road and west of the Tronville copse. On horseback, however (from Slope 780 of the map, south of the Mars-la-Tour—Vionville road), we could survey the French position, which extended from Height 846 to Greyère Ferme; we even could distinguish a mounted group of some size among the troops on Height 846. It was General Ladmirault with his staff. To the right and left were long lines which we could follow to the west as far as Greyère Ferme. Among the infantry we could make out lines of artillery, which even then were directing a lively fire on Mars-la-Tour and on the 4th Cuirassiers. It was not possible to make a correct estimate of the enemy's forces, but there could be no doubt that at least we had a division in front of us. Moreover, the sun was shining slantingly along the entire French position, which was as yet free of smoke and dust. The conditions were as favorable for a good view as they could be at that distance. The clock pointed to 4 o'clock as the brigade started.*

In time of peace any general officer who would attack an opponent of whom he has no information, learning when too late that he had run up against a position unassailable by frontal attack, and which was held by greatly superior and better armed forces than his own, would be sent to Coventry on the spot. That standard of measure is inapplicable in war, because in actual war various favorable circumstances might counterbalance the numerical inferiority of the attacker. Such circumstances could not, however, be counted here, as the enemy was awaiting us in deployed lines under cover,† and we could not expect to surprise him. The

*When the 57th Regiment moved off, I was asked: "What time?" I answered in a loud tone of voice: "It is 4 o'clock."

†At least Grenier's division.

French position was as strong as though Nature meant to show by this example how positions should be selected in future. A *slanting exposed plane* equalling in extent the range of the rifle; at *medium range* an obstacle in the shape of a meadow-bottom 3—400 paces wide and cut up by numerous wire fences; at *close range* a ravine which rendered the position next to unassailable. And of all this those in command knew *nothing*, although that part of the ground had been in our possession the whole forenoon! The example is typical for the selection of a position on the part of a defender who desires to profit to the fullest extent by the small-caliber rifle; the same example also goes to show how *cavalry* should *not* act, how *the system of orders* should *not* be regulated, how *the system of reports* should *not* be managed. Sufficient reconnaissance and correct and quick reports will preëminently be required in the future, and the omissions in these respects and on that ground are valuable lessons.

Before going into battle on the 16th of August, *Grenier's* division numbered, according to the *latest* researches, 7750 rifles. At the time when the 38th Brigade attacked that division, the latter no longer had the same strength, as it had previously taken the offensive and been driven back to the height of Bruville. Let us nevertheless take that figure. The 98th Regiment and the 5th Chasseur Battalion of this division stood at Greyère Ferme, whence they maintained a rather weak fire action. The 38th Brigade with its 4400 rifles was therefore pitted against 7750 rifles on the other side.

Cissey's division numbered 8350 rifles; it did not take part, however, until the catastrophe had become imminent. The 57th and 73d Regiments and part of the 20th Chasseur Battalion (about one-half of *Cissey's* division, some

4175 rifles) turned on the 38th Brigade, while the remaining 4175 rifles were engaged in the direction of Mars-la-Tour and against the German artillery posted farther west.

At the culminating point of the action, therefore, the opposing forces were 11,925 rifles against 4400; the former were on the spot from the beginning, the latter engaged *successively* and at *shorter* range.

A further point against the Germans should be specially mentioned—viz., the very great superiority in the number of French guns, and in that particular the attack of the 38th Brigade differs materially from others. The fact has been established that the entire French artillery of both divisions and the reserve artillery were in action at the time when the 38th Brigade was crossing the Vionville—Mars-la-Tour road—i. e., 36, 12, 12, and in addition 2 mitrailleuse batteries, making in all 72 guns. As against these 72 guns we had but 36. The superiority of fire, not only of the French infantry, but also of the artillery, could not but be great under the circumstances.

(c) *The Deployment.*—The brigade as formed to the southwest of Mars-la-Tour lent its flank so much to the enemy that its line was almost perpendicular to the enemy's front, which may be explained, but not justified, by the fact that Tronville had been assigned to the brigade as its first objective. The order to attack was now received. The battleground spread before us extended 2500 meters from left to right, and the regiment which had to take most ground (57th Regiment and 2 pioneer companies X.) should first have gained its new front by a large wheel to the left, before the general advance was begun. That was not done, as I have shown above.

During the movement the unavoidable evil results became apparent, and to minimize them every battalion com-

mander urged his troops forward at an increased pace. It did not help any. The original error could not be made good by a more rapid gait. The brigade had not paid sufficient heed to the question of "space"; the battalions, even the companies, became successively engaged, and were successively repulsed, from left to right, so that the 16th Regiment (II. and I. Battalion) had already come to a halt at the moment when the Fusilier Battalion of the Fifty-seventh (right flank of the brigade) just reached the skirmish line. The numerical conditions were quite inadequate for carrying out the attack, and the method of employment of our forces destroyed the last hope of success.

To the blunder of ignorance as to the enemy's strength, his position, and the battle-field, another no less fatal one was added: *proceeding to the attack without previous suitable deployment.**

(d) *The Attack.*—During the great wheel to the left the I. Battalion of the Fifty-seventh, when about 2500 meters from the enemy (south of the Mars-la-Tour—Vionville road), deployed two-thirds of 2 companies (1st and 2d) as skirmishers by order of the division commander, and one of these companies (2d—57th) was directed by the division commander in person toward the 16th Regiment, so that when the battle came to a standstill, the distribution of the troops was as indicated in Sketch III.

During the advance the troops crossed each other obliquely. The attack itself was a "chase," so that the men collapsed in front of the enemy's position from sheer ex-

*At the inspection of F.—57th on the drill-ground on the Cher near Tours, by General von Voigts-Rhetz in February, 1871, General von Schwarzkoppen was present, who just before had resumed command of the 19th Division. On noticing me, he came riding up and said, in his jovial way: "Comrade, you were the adjutant of the brave Lieutenant-Colonel von Röll. That was a *bad business* at Mars-la-Tour. Who could have guessed that so many were against us?"

haustion. This brings me to the ravine at Mars-la-Tour.

The Official Account states that all 5 battalions crossed the ravine. I say only 1st, 2d, 3d, 4th, 7th, 8th, 11th—16th and 2d—57th. During our advance the French opposed to F.—16th, I.—57th, F.—57th, 2 C. P. X. a strong line which came forward to the northern edge of the ravine; our 3 half battalions halted 80—100 meters south of the southern edge of the ravine *and did not get one step farther*. It is not sufficient to say so, however; proof must be adduced. In doing that I beg indulgence for stating some personal experiences which I cannot omit, as they are part of the proof. I do not thereby intend to bring myself to the fore, and in order to escape any such suspicion, the first edition of this book was published anonymously.*

As far as 150 meters to the north of Contour 780, Ohly's half-battalion (12th, 9th—16th) and 4th, 3d—57th moved abreast of each other. The latter here threw themselves down upon signal from Lieutenant-Colonel von Röll, while the former continued its march by an order from Lieutenant-Colonel Sannow, delivered, according to the History of the Sixteenth, by the adjutant, Lieutenant von Hövel. I was at the most 30 meters to the right of 12th, 9th—16th. At that moment Vice-Sergeant-Major Thiel, who commanded a platoon of 2d—57th, came up from the left and reported to Lieutenant-Colonel von Röll: "I report respectfully that my platoon no longer follows me. They are lying down. I have repeatedly rushed forward. It was of no use." Lieutenant-Colonel von Röll, a man of quick disposition, turned to me saying: "These fellows!" and ordered summarily: "Ride back with the platoon leader. You will find me with Lieutenant von Warendorff"

*Various reasons have in the meantime prompted me to put my name on the title-page.

(1st—57th). I reached the platoon, and the brave platoon leader, a hero in the fullest sense of the word, waving his sword and calling "Forward!" succeeded in carrying some non-commissioned officers and men with him. Most of the remaining men were lying dead or wounded on the ground as they had stood in the ranks, among them several whom I had trained as recruits in 1866 and 1867, and whom I knew well. They had already met the fate of the brave soldier.* To the left rear, alongside of Ohly's half-battalion, were the rest of those who advanced to the foremost line. There the platoon leader, Vice-Sergeant-Major Thiel, was killed, and also two non-commissioned officers whom I knew. I rejoined Lieutenant-Colonel von Röhl exactly in rear of the right of Ohly's half-battalion. At that moment 11th, 9th—57th was on our right forming line and firing 2 or 3 volleys. Lieutenant-Colonel von Röhl remarked: "Well, Warendorff [1st—57th] will be glad." (He assumed that that company was being shot into from the rear.) Riding straight forward, he said to me: "Is that Lieutenant-Colonel Sannow?" I said it was. Lieutenant-Colonel von Röhl remarked: "I am glad; we must get some order in this business. F.—57th is firing into my first company from the rear, my second company has been torn apart by the men of the Sixteenth. If only Bernewitz [chief of 3d—57th] will take good care of the colors. That is a hellish fire."

He made several other remarks. I omit them because they were of a personal character and had little to do with the matter before us.

Thus we reached F.—16th. The following was the sight we beheld: Lieutenant-Colonel Sannow had ordered

*Although completely deployed as skirmishers, the company lost 3 officers and 90 men.

Ohly's half-battalion to lie down in rear of the hedge which has several times been mentioned, and was availing himself of the cover also. To the right lay his adjutant, Lieutenant von Hövel, severely wounded, and the dead horses of both. Captain Ohly was in the center of 12th, 9th—16th, mounted, cheering his men and firing repeatedly from the saddle. In front and on either side of the half-battalion, skirmishers were lying on the ground: those on the left from 10th—16th and 2d—57th, those on the right from 1st—57th; the half-battalion itself was in close formation; a few shots were fired from the first line, but no regular fire action was maintained. Never have I seen an officer of such coolness and bravery as Captain Ohly, chief of 12th—16th. The sight is indelibly impressed on my mind. His sharp voice rang through the rolling fire of the enemy: "Forward, lads!" "There they come; look out!" Again: "High the colors!" Finally he rode forward to carry everybody with him, but it was in vain. The dead and wounded were too many.* As Lieutenant-Colonel von Röhl halted in front of Lieutenant-Colonel Sannow, the latter said: "Röhl, you had better dismount." He did so; immediately afterward the horse was hit in the chest; it reared, and after a few bounds fell dead. Lieutenant-Colonel von Röhl then knelt beside Lieutenant-Colonel Sannow, the latter remarking: "This is the only shelter. We cannot advance as long as the fire is so severe. We have to wait until they have fired away their ammunition." is so severe. We will have to wait until they have fired away their ammunition."

A few minutes later Lieutenant von Wolzogen, adjutant of I.—16th, reported to Lieutenant-Colonel Sannow. His white horse was bleeding from several wounds; he him-

*This half-battalion lost 8 officers and about 210 men.

self was untouched and preserved a heroic coolness* The import of his message was: "My commander is wounded, we are repulsed [I.—16th], Colonel von Brixen is dead."

The adjutant had barely finished his words when the enemy charged from all directions crying: "*En avant, en avant! courage, courage!*"† Lieutenant-Colonel Sannow ordered: "Back to the ravine; assemble there." Lieutenant-Colonel von Röhl: "Warendorff [1st—57th], there!"‡ That officer, however, turned instead toward the Bois de Tronville. Then: "Take my adjutant to the rear." These were his last words; a bullet pierced his brave heart, and he fell without a sound.

He was sickly, and suffering from abdominal and nervous ailments, but a rare will-power swayed the feeble frame of his body. His heart was full of noble impulses. A lucid intellect and admirable judgment were his. Idea succeeded idea in rapid succession; the mind was never at rest. To his men he was a father; his sentiments were those of a sterling Prussian officer. Honor, duty, devotion.

*Of all the mounted officers who entered the zone of that sweeping fire, but three remained untouched: Captain Ohly and the Lieutenants von Wolzogen and Bermuth, all of the 16th Regiment. Their horses bore several wounds.

†F.—16th and I.—57th were probably 20—25 minutes behind and on the flank of the hedge.

‡On this part of the battle-field not a man got to the north of the ravine of Mars-la-Tour. When visiting Captain Ohly in Cologne, after the appearance of the portion of the Official Account here concerned, I expressed my surprise as to who could have prepared that statement. Captain Ohly's words were: "You know best where I was and my half-battalion. You were there." The fable of the drummer who, after the victory of Belle Alliance, was put on a horse to alarm the fleeing enemy, has been preserved down to our days. Ollech, in his biography of General Reyher, mentions only one. Delbrück, in his biography of General Gneisenau, mentions several, although the falsity of that widespread statement is proven by the History of the 2d Dragoon Regiment, which appeared several years before Delbrück's book. The attack of the 38th Brigade has in like manner been converted into a fable to the detriment of history. I do not care to be instrumental in perpetuating the fable.

and kindness guided him. Human failings, which, as a rule, are harshly and ruthlessly condemned, were invariably treated by him with indulgence.

His nights were for the most part passed without sleep. In the field he hardly ever indulged in more than a moderate drink of wine or a cup of coffee.

He was fond of stimulating young officers to reflection, and never evaded criticism when preferred in a besitting and considerate manner. He sometimes seemed to provoke criticism in order to change the subject and to know the men. He knew them and made a formal study of them. He had a presentiment of his death. On the march to the battle-field, he said to me: "I shall soon have an opportunity to prove my peace example—but no; *I shall not survive it.*" He became silent then. After a while, he got out his cigar-case. "We will divide," he remarked. "Perhaps, it is the last thing I give you. The battle will be bloody, very bloody. Remember me when I am no more and when, at some future day in beautiful Hanover, you are speaking of to-day." He then relapsed into a brooding silence; it was only in the battle that the buoyancy of his spirit returned.

I want to mention something else. At Pont à Mousson we were quartered on a noble family, and the lady of the house showed astounding familiarity with the French Army. At supper a lively conversation developed, which turned on generals, armies, etc.; afterwards we retired to our room. During the night, as I was about to lie down, some one knocked at my door. "Do not lie down," said the lieutenant-colonel on entering. "It is clear outside and quiet, the warlike noise has subsided, there is a beautiful starlight sky; let us enjoy it, and take a walk in the slumbering streets." The conversation turned on the probable outcome of the war. On the market square Lieutenant-

Colonel von Röll stopped in front of the town hall and spoke in an animated tone: "*We shall overthrow the imperial armies, the throne of Napoleon will collapse, Paris will fall. The nation is sick and over-excited and is going to rise. Think of the Duke of Brunswick, think of Napoleon I. Such a man is going to arise this time also; the name of the modern dictator will probably be Leon Gambetta.*" Hardly had the echo died away, when an alarm signal roused the silent camp. It was Napoleon day, the 15th of August, and we moved into a position of readiness because information had been received that on the 15th of August the French might take the offensive.

Here I must digress for a moment to other details, because they are instructive. As I shall prove in the chapter on losses, ours had been great so far; still not so heavy that we would have been totally incapable of some resistance. Why did we not make that resistance? Because we were surprised in the fullest sense of the term; so much so that the troops, already for the most part deprived of their officers, lost their heads. *Psychological motives, therefore, surprise and consternation with their consequences, were in part the causes of the disaster.* The course of events was such that both sides, taking the offensive, burst upon each other *at the most critical point and at the most critical moment*, so that in some places the opponents actually ran into one another.

Both had executed a big wheel to the left at the same time. The French with Knoll S46, the Germans with Mars-la-Tour as the pivot. Under these circumstances, it was natural that our right wing encountered that portion of the enemy which had deployed during our advance, or better, which was awaiting us, while our left and the enemy's right mutually met on the offensive.

But while we had been unable to do the enemy either

material or moral damage, his position, arranged in tiers, permitted of the employment of his fire-arms on the most extensive scale, and of the employment of *a part of his forces on the offensive* at the same time. Thereby we suffered much materially and morally. The fire increased instead of diminished, it came nearer and nearer, the smoke became impenetrable. A greatly superior force stood close in our front *unsuspected*. Had the French not halted 80—100 meters south of the ravine, and had they fought instead of despoiling our dead and wounded men and horses, the brigade would have been done for, and future history would have chronicled: "To this point five brave Prussian battalions penetrated; none came back." It would at the same time have been the most suitable inscription on their monument on the field of honor as in the annals of war.

I was being led to the rear by a fusilier of the Sixteenth and by a musketeer of I.—57th, part of the time by the side of Lieutenant-Colonel Sannow. After he had turned to the east, Lieutenant Hilken, of F.—57th, came along; he was leading the horse of Captain Scholten, of the Sixteenth, who had been killed, and asked me: "Don't you want to mount?" I replied: "I can't; I am wounded." He said: "Steinmetz has probably got enough by this time.*" What nonsense this is! Thank heaven, the French are not sending cavalry after us."

When he had gone along a few paces, a fusilier of 12th—57th by the name of Opderbeck passed us; he was shot through the left arm or through the left hand, which he held out, screaming with pain. I addressed him rather roughly, "Don't yell so;" Opderbeck then took the direction

*It was then believed that the battle was being conducted by General von Steinmetz in continuation, as it were, of that of the 14th of August, and he was the first that would be credited with "taking the bull by the horns."

of Mars-la-Tour, with evident deliberation, and I noticed generally that the men had well observed the terrain, as those who were without leaders went back to where they had come from.* Immediately afterward my two men were hit; they fell, and we all remained lying on the ground.

The French halted in the position relinquished by us (80—100 meters south of the ravine)† in order to close up their lines in rear, which had probably become disordered in crossing the steep ravine. It was not until some time afterward that Grenier's division passed over us, first a skirmish line, then another, then battalions in line. The first skirmish line kept up a brisk fire; in the second the men were intermingling in confusion.

Every one seemed bent on encouraging himself by yelling, "Courage, courage! *En avant!*" No one paid heed to the enemy except to those of his men and horses that were stretched on the ground. This was the moment when the 1st Guard Dragoons charged.

(c) *The Retreat.*—I am unable to state how long the French remained south of the ravine, because time is wont to

*Opderbeck and I had been cadets together. Afterward, as an artillery officer, he committed some indiscretion that cost him his office; at the outbreak of the war, he reported as a volunteer to the 57th Regiment. In this rather difficult position he behaved toward me with much tact, and was a source of much merriment to the men on account of his irrepressibly cheerful disposition; he bore all fatigues of the march, etc., without apparent effort, and yet he did not strike one as strong. Opderbeck was soon cured, but was again wounded in the same arm at Beaune, on November 28th, and so severely that an amputation was necessary. Owing to his valorous bearing, he was again commissioned, and is at present mayor of Lillidenscheid.

†Here Lieutenant von Hövel, adjutant of F.—16th, who was lying some 200 meters north of me, was picked up, carried off, and brought before General Ladmirault, who asked him to what army the troops engaged here belonged. Hövel said, "To that of the Crown Prince," which caused visible surprise. It is possible that the statement was of decisive influence on the enemy's measures. Lieutenant von Hövel told me this when we both, subsequently, were undergoing treatment at Bonn.

fly during such occurrences. It should be noted, however, that the French infantry did not penetrate into Mars-la-Tour, which had been burning ever since the beginning of the battle, or get farther on the east of the village than to within 150 meters to the north of Contour 780. General von Voigts-Rhetz, observing the ill fortune of the 38th Brigade, ordered the Guard Dragoon Brigade to attack, but the 1st Guard Dragoons alone were on the spot. Coming around the east of Mars-la-Tour, they charged; the hostile infantry lost every vestige of order, the lines intermingled, though in the main remaining on the spot,* and busied themselves, as heretofore, with policing the field and leading back wounded and unwounded prisoners. For a little while the hostile infantry fire ceased altogether, and it would have been possible to assemble all parts of the brigade in an orderly manner and lead them to the rear; at any rate, we could now see numerous men endeavoring to carry off their wounded comrades. A little man of 2d—57th, who with another was leading a wounded man, picked me up, saying: "Boy, carry him alone; there lies our adjutant, I'll fetch him." The name of the brave man to whom I probably owe my life was Dienemer; he lived at Solingen, where subsequently (1873-74), as adjutant at Gräfrath, I saw him frequently. A fatal circumstance here occurred: An adjutant galloping along the brigade from left to right called out at the top of his voice, "Retreat to Thiaucourt."† I raised myself

*The statement to the contrary on page 86 of the History of the Fifty-seventh is wrong.

†It was the adjutant of the brigade. In the manuscript of my winter essay, 1872-73, the fact is noted on the margin in the handwriting of Colonel Arnold, no doubt after he had found my statements correct. The brigade adjutant was von Kalbacher, recently deceased, as colonel and commander of the 74th Regiment. The order for the retreat had been issued by General von Schwarzkoppen, not by General von Wedell. The order had been delivered by Lieutenant von Bernuth I. On hearing of it, General von Voigts-Rhetz

up to cast a last glance over the field. Terrible misery all around me, and then that order; could I assume anything else but that everything was lost? Both regiments had lost nearly all their officers; the men subsequently took in part the direction of Tronville, mainly under Lieutenant-Colonel Sannow; the greater part, without officers, retraced their steps on the road to Thiancourt, and did not rejoin their colors until the next afternoon. This example goes to show how mischievous such a "method of delivering orders" may be. After General von Wedell received the order, instead of communicating the same quietly to Colonel von Cranach and Major von Medem, both of whom could easily have been found, and instead of hunting up a few more officers, for which there was ample time, the adjutant yelled repeatedly at the top of his lungs, "Retreat to Thiancourt," yet none of the commanding officers received the order! At that moment the remnants of the brigade were nothing but shadows.

The same precipitation which characterized the advance prevailed on the retreat, and it was only beyond Contour 780 that things mended. Here, on the field strewn with the corpses of men and horses and under artillery fire, which had been reopened with the greatest vehemence, Lieutenant Neumeister, from the staff of the X. Corps, was riding at a walk along the line of attack, stopping here and there and giving orders. The officer displayed heroic strength of character and is deserving of the highest praise for his devotion and coolness. *It was he chiefly who untangled the chqes.* His merit is as imperishable as my gratitude. "Comrade," he said, "have yourself taken over there, where

countermanded the order. The troops were to be assembled in the direction of Tronville, but it was too late to recall all the men deprived of their leaders.

there is a dressing-station." It was to the south of Mars-la-Tour. "Those not wounded into that village," he said, pointing to Tronville; "the wounded there," pointing to Puzieux. After collecting the able-bodied men, he left the spot where he had erected for himself this splendid monument.

His calmness inspired some confidence; hope began to rise in our hearts that all might not be lost; tears of joy welled in our eyes. What sentiments do not sway the warrior's heart at such moments? What does not the anguished soul, the terribly disappointed mind of inspired and confident men, think, and feel, and hope? How awfully oppressive is the appreciation of such a defeat! One sees farther than the eye permits; one would like to know how things are going on the left and right; one has but *one* idea. Has it been ended in our favor? Defeat before us, uncertainty around us, in this most terrible of all anguishes we leave the battle-field. The comforting news that "the general situation is not unfavorable" does not reach us; and on we went, defeated, shot to pieces, unsatisfied, toward our native valleys.

The retreat of the 38th Brigade constitutes the most horrible drama of the great war. The brigade lost 53 per cent,* the proportion of the dead to the wounded being 3:4; strong men dropped dead; the terrible heat, the preceding extraordinary march, and the equally extraordinary attack had consumed the last remnant of strength, and the behavior of these terribly disappointed warriors was as varying as their hearts. I saw men cry like children, others collapse without a sound; in most cases the need of

*According to page 626 of the Official Account, I., 60 per cent. My data are based on those given in the chapter on losses, the captured being included. The latter are also included in the figures of the Official Account.

water suppressed all other feelings; the body demanded its rights. "Water! water!" was about the only sound I heard from these phantoms. The enemy's lead dropped among the miserable *débris* like hail; they moved on slowly, their heads drooping from fatigue, features covered with limestone dust clinging to the perspiring faces, distorted and obliterated. The tension exceeded human capacity; the man had ceased to be susceptible to anything; neither the sublime nor the vulgar appealed to him; he failed to recognize his friends and his superiors. Thus the men moved across the field where shortly before they had been singing cheerful marching songs. A few nimble squadrons and not a soul would have escaped. Anyone who has ever looked intelligently into such features knows how deeply they impress themselves, for they remind one of the expression of the madman; mad from bodily over-exertion, mad from awful impressions on his soul; and madmen seemed to be there in fact. Through the midst of these infantry phantoms single riders, powerful men on big steeds, are galloping in the direction of Tronville, the saber at the charge, convulsively gripping the panting horse with the thighs, their faces red and streaming with perspiration. They were cuirassiers (No. 4). What did they want? No one knew, for they did not know themselves. Evidently they believe themselves still in the charge.

"Where are your officers?" asked the comrades of the batteries in action of those passing. "We have no more," was the sad reply. Here and there, however, one was left, and thus, after all the misery, the blood-soaked field still witnessed some heroic sights. We mention here, in the first place, Colonel von Cranach, who, riding toward the *débris* of I.—57th, took the colors from the hands of the

exhausted bearer and brought them to a place of safety.* Several men had been wounded or killed while carrying the colors of F.—57th, when Lieutenant von Streit saw its last bearer (Lance Corporal Dorn) fall some 25 meters in rear. Some French skirmishers were within a few steps of Dorn; and now there was a race for the colors between them and Streit. The young officer was quicker; he seized the colors; on all sides rang out the "*Vive l'empereur!*" everywhere the enemy's bands struck up; joy there, apathetic men here. The sounds of the music cut deep to the heart, destructive fire sweeps the field, but the young officer has no thought but that of saving the colors; some Frenchmen run after him, others send their bullets, none hits the mark, the lead seems to honor virtue; the strength of the hero does not flag, panting he carries the colors out of the zone of fire, and finally finds safety for them with 1st—57th.† Too great efforts had been demanded of the troops, physical and psychical exhaustion was the result; an accident was instrumental in saving their honor. Had not Providence been kind, execration, dishonor, and ignominy would have attached to the number of the regiment, and no one would ever muster sufficient courage to write in its vindication. Yet these troops did their duty like brave men, and the annals of war probably do not record an instance which, taken all in all, can be compared to this one; yet the sacrifices will not have been made in vain, if the proper lessons are deduced therefrom.

Another young officer of F.—57th, Lieutenant de Rège, came unscathed out of the battle. Men were wandering

*Prince Frederick Charles, who heard of it, intended to have the scene painted. So far as I know, the preparations had all been made, when he suddenly died. The Fifty-seventh was thus deprived of the great honor of becoming the counterpart of Keith at Hochkirch.

†From a written communication from Lieutenant von Streit.

singly about the wide battle-field; he seizes a stray and riderless horse and quickly mounts. Raising his sword, he collects the orphaned men on the road from Mars-la-Tour to Vionville. Soon a body of 50—60 men is assembled; fronting the vainly assaulted position, the brave men stand in ranks, tears streaming from their eyes. It is the young officer who shows what greatness can do. "Heads up, men!" he says; "we are not defeated; we are merely repulsed. The fortune of war is changeable. To-day we have been 'licked'; the next time we'll pay those fellows back with interest." He gives the command "About," and the men march out of the enemy's fire.

Only those who have been present in a similar murderous conflict, when almost every second man was shot down, can form an idea of what moral strength and confidence in one's own power were necessary to act thus at a moment when nothing was left of the brigade but some phantom-like forms. That is the Psyche the army needs that wishes to conquer. As regards the men, I will not omit to mention that I did not see a single man throw away his rifle or anything else; hardly did I hear a wounded man moan or wail. The well-trained soldier, it seems, preserves a certain greatness of soul even in the most terrible misfortune.

After dark some fugitives of the 38th Brigade arrived at the camp of St. Hilaire, where, as previously stated, 11.—57th, with some Guard Dragoons and the headquarters guard of the X. Army Corps had been left for the safety of the trains of the 19th Division, of the Guard Dragoon Brigade, and of the headquarters of the X. Corps.

At about 10:30, on the evening of the 16th, the column marched off for Thiaucourt in the following order: At the

head the adjutant of the battalion,* with the headquarters guard and Guard Dragoons next, the train, II.—57th bringing up the rear. Between 3 and 4, on the morning of the 17th, the head reached the deserted and silent village of Thiaucourt. Here an intendants councillor of the X. Corps brought the adjutant an order to march to the battle-field of August 16th. The adjutant rode back on the road to St. Hilaire to communicate the order to his commander, and found the battalion between 5 and 6 a. m., near St. Benoit, soundly sleeping on both sides of the road. His commander had meanwhile received the same order from another source.

Between 6 and 7 the start for Tronville was made. When the commanding general of the X. Army Corps saw the battalion intact, he shed tears.

I have been unable to ascertain by whose order the battalion retreated to Thiaucourt *during the night*. It is possible that the statements of the fugitives of the 16th prompted the commander to retreat; if the order originated with some higher commander, it would likewise explain the situation.

On that evening the 38th Brigade stood southeast of Tronville. None of the battalions numbered more than 300 men.

The result of my observation is as follows:

1. The brave assailants did not emerge in front of the enemy 125 paces beyond the ravine; they did not get farther than to a point 80—100 meters south of the ravine (F.—16th, I.—57th, F.—57th, 2 P. C.); I.—16th, 7th, 8th—16th, 11th—16th, and 2d—57th alone got farther north. Proof: The first three battalions were never out of my sight from beginning to end. I was mounted up to the re-

*According to a communication from him (Lieutenant Kropp).

treat, was able to see and had a good view, and rode the distance from F.—57th to I.—16th (see my previous statement)* by order of my late commander, who did not want to lose his second company. I also walked over the battle-field during November, 1870, and found that the large graves corresponded with these statements. I established the extreme line of the 16th and 57th Regiments by corpses, buttons with numbers, scabbards, etc. One of the largest graves was just south of the bank and hedge† behind which 3 companies had sought shelter.‡ The bank and hedge still existed in the fall of 1876.

2. The distance was *not passed over by rushes*, certainly not in the case of F.—16th, I.—57th, F.—57th, and 2 P. C. According to Major Meissner's statement (*Militär Wochenblatt*, 1891), II. and I.—16th did advance by rushes, but I doubt it, for the reason that in those days the advance by rushes was not practiced and such things cannot be improvised. The entire distance was covered at the accelerated step and the movement was checked 100 meters south of the ravine. The men lay down, and nothing human or divine could have gotten them forward once more. Those who may, nevertheless, think that it might have been possible, fail to consider the moral strength of the musketeer, in connection with that fire, the exposed plateau, those

*Position of troops, Sketch III.

†Sketch III.

‡Nothing is to be seen to-day of the former large graves on the battle-field of the 38th Brigade. The ground is French territory, and the French Government had the bodies exhumed and reinterred in a large cemetery near Mars-la-Tour. There on a bare slope rest 4,000 warriors! Since then local studies in that respect have become impossible. I will also state that the French Government had a grand monument erected in the cemetery; somewhat displeasing, to be sure, since it does not seem to stand to the honor and glory of her dead warriors, but as a monument of vengeance.

losses, and the complete physical exhaustion. Devotion and self-sacrifice have their limits.

3. Beyond (north of) the ravine, Chassepôt and needle-gun did not mutually do their work of destruction; the effectiveness of the fire was all on the French side. For, (a) We never were where we are said to have been. (b) During the entire action, both regiments fired but few rounds. The statement under (a) is not likely to be contradicted by military history; that under (b) will presently be explained. Although they are based solely on the testimony of participants, my statements will be found indisputable in so far as the 38th Brigade did not succeed in opening a regular fire action, and could therefore inflict but insignificant losses on the enemy. Since the French losses were considerable, they must have been inflicted by some one else—i. e., by the German artillery and by the Seventy-ninth.

(f) *Losses.*—The German losses were as follows:

(a) Regiment No. 16:

	KILLED.		WOUNDED.		CAPTURED.	
	Officers.	Men.	Officers.	Men.	Officers.	Men.
I. Battalion	27	220	21	269	1	356
II. Battalion		123		226		
F. Battalion		183		292		
Total	27	526	21	787	1	356

48 officers and 1313 men, exclusive of 1 officer and 423 men missing, of whom 1 officer and 356 men had been captured, which statement agrees with the Official Account. Total loss, 48 officers and 1736 men.

(b) Regiment No. 57:

	KILLED.		WOUNDED.		CAPTURED.	
	Officers.	Men.	Officers.	Men.	Officers.	Men.
1st Company.....	1	19	3	51	1	*26
2d Company.....	1	32	2	58		
3d Company.....	1	14	2	42		
4th Company.....	.	10	3	41		
5th Company.....	.	..	.	..
6th Company.....	.	..	.	..
7th Company.....	.	..	.	..
8th Company.....	.	..	.	..
9th Company.....	.	19	3	37		
10th Company.....	1	48	2	82		
11th Company.....	.	44	2	48		
12th Company.....	2	44	1	64		
	6	230	18	423	1	26

Total loss, 24 officers, 653 men. †

(c) 2d and 3d Pioneer Companies No. X.: 1 officer, 8 men.

(d) 1st Foot "Abtheilung" of the Hanoverian Field Artillery Regiment No. X.: 44 men and 40 horses.

(e) 1st Guard Dragoon Regiment: 14 officers, 82 men, 204 horses.‡

On the French Side:

1. Grenier's Division: Regiment 98th: 1 officer, 10 men. Chasseurs No. 5: 1 officer, 20 men. The foregoing troops fought against 5th and 6th—16th, the latter losing in all 6 officers and 127 men; the conflict therefore was least bloody at this point.

*According to the Official Account, 18 men.

†According to the regimental records. The Official Account states the losses of the 57th Regiment as follows:

Killed, 6 officers, 366 men; wounded, 17 officers, 422 men; captured, 18 men; total loss, 23 officers, 806 men.

‡Page 134 of the History of the 1st Guard Dragoons by H. von Rohr the losses are stated as 15 officers, 126 men, 246 horses.

Regiment No. 13: 6 officers and 91 men, killed and wounded.

Regiment No. 43: 5 officers and 180 men killed, wounded, and missing.

Regiment No. 64: 1 officer and 28 men.

Artillery: 14 men.

Total, 14 officers and 343 men. Their firing line extended from the great road from Bruville to about the Bois de Tronville.

Regiments Nos. 13th and 43d were sabered by the 1st Guard Dragoons and fired into from the rear (by Seventy-ninth, German). The losses of these regiments of Grenier's division are thereby explained. They were probably, at that hour, mostly due to the fire of the Seventy-ninth, which fired into the wildly retiring masses without receiving fire in return. It should also be noted that in the foregoing figures are included the losses suffered by the regiments Nos. 13 and 43 before the arrival of the 38th Brigade, during Grenier's offensive movement toward the road Mars-la-Tour—Vionville; in other words, these regiments suffered their principal losses to the south of the ravine.

2. Cisse's Division:

Regiment No. 1: 16 officers and 400 men.

Regiment No. 6: 3 officers and 17 men.

Regiment No. 57: 23 officers and 279 men (97 killed, 177 wounded, 5 missing).

Regiment No. 73: 18 officers, 347 men (killed, wounded and missing).

Chasseurs No. 20: 5 officers, 68 men (killed and wounded).

Artillery: 20 officers, 6 men.

Total: 85 officers and 1117 men.

Who inflicted these losses on the division? With the

attack of Cissey's division the battle at this point was practically ended. The 38th Brigade encountered in its front the regiments Nos. 13 and 43, which suffered comparatively little. It is impossible that at this point Chassepôt and needle-gun mutually did their deadly work. The French Regiments Nos. 57 and 73 did not attack until the strength of the 38th Brigade was as good as spent; moreover, they took the *débris* in the left flank, nor did the French Fifty-seventh suffer so very much.

3. Artillery Reserve:

Battery 6th—8th.....	1 man.
Battery 7th—8th.....	?
Battery 5th—17th.....	1 officer, 4 men.
Battery 6th—17th....	2 officers, 6 men.
Battery 11th—1st	5 men.
Battery 12th—1st	8 men.
<hr/>	
3 officers, 24 men.	

Add Legrand's Cavalry Division (4th):

2d Hussars.....	23 officers, 80 men.
7th Hussars.....	9 officers, 53 men.
3d Dragoons.....	13 officers, 105 men.
<hr/>	
45 officers, 238 men.	

According to French sources, therefore, the entire
IV. French Army Corps lost

Grenier's Division.....	14 officers, 343 men,
Cissey's Division.....	85 officers, 1117 men,
Artillery Reserve.....	3 officers, 24 men,
Legrand's Cavalry Division.....	45 officers, 238 men.
<hr/>	
147 officers, 1722 men,	

as compared with the heretofore accepted figure of 200 officers and 2258 men.

It should be borne in mind that the statements as given by the various troop units are based on different assumptions. Some merely give killed and wounded; others also

the missing; others merely give the total number *hors-de-combat*. To go into the details of these figures would lead us too far; and having given an account of the development of the French firing line, I must leave it to the reader to judge in how far these losses may have been inflicted by the 38th Brigade.

(g) *Notes to the Official Account Regarding the Terrain.*

—The description of the terrain is insufficient, and how harmful such inaccuracies may turn out is shown by the fact that in Colonel von Lettow's tactical examples, which are intended for instruction at the war schools, the attack of the 38th Brigade is described as taking place over *open* ground. *It was more than that*, although up to Contour 780 II., I., F.—16th and I.—57th found some, and F.—57th and 2 P. C. found less cover. For it was the two great obstacles (wire fences and ravine), in connection with the absence of cover, that gave the ground its character.

The land around Mars-la-Tour is very much subdivided. The subdivisions were then enclosed by wire fences, likewise the meadows along the brook which encircles Mars-la-Tour in the north. The wires had to be cut with the sword bayonet under the enemy's fire, causing checks, delays, and losses. Since the general direction of the movement was from south to north, the transverse wires alone were cut, and when subsequently the 1st Guard Dragoon Regiment passed around the south of Mars-la-Tour to attack the hostile infantry, it encountered the intact longitudinal wires, and had to jump them. These circumstances are mentioned in connection with the dragoons, not with the infantry. The fences extended up to Contour 780.

It was necessary to mention the bank and hedge on Height 780, 80—100 meters south of the ravine, because they constituted our sole cover, and the natural objective of our

march and target for the enemy. In fact, about one-fifth of the brigade was lying near it.*

VI. Objectives of the French and German Commanders.

The enemy interrupted his movement in order to repulse the attack of Germans, intending to resume the march so imperatively demanded by the situation of the French army.† That a capable leader might have secured a tactical victory is undisputed. All the IV. French Corps had to do to have victory fall in its lap was to advance after 5:30 p. m., and to take the direction of Tronville, as there was not a single effective battalion to oppose the advance of these 15,000 men. The situation of the Germans would, for a time, have been most critical; but in view of the positions of the German XII., IX., VIII., VII., and Guard Corps, it is a matter of doubt whether the victory would have afforded the French *decisive* results. But that need not have been the Marshal's aim; having shaken himself loose at 5 p. m.,

*Plan 5B of the Official Account shows the position of both sides under the designation "in the 5th hour of the afternoon." On this plan, as well as on that given in the History of the 1st Guard Dragoons, the lines marking the attack of our infantry are prolonged to the north of the transverse brook in front of the French position. That is incorrect. In like manner, the charge of the 1st Guard Dragoons is incorrectly noted on plan 5B of the Official Account and on the plan of the battle in the History of the Sixteenth; the 4th Cuirassier Regiment also seems to be marked incorrectly. At one time the 1st and 3d squadrons are southeast of Tronville, at another time the 3d and 4th squadrons are west of the Bois de Tronville. Moreover, in the *ordre de bataille* (Supplement I., page 11, I.) Legrand's cavalry division is mentioned as having 16 squadrons, while on Plan 5B it numbers 18.

The troops of the 38th Brigade are marked altogether wrong on Plan 5B of the Official Account (compare Sketch III.). The History of the Sixteenth goes still farther, in that it shows the entire 38th Brigade, with the exception of 5th 16th, to the north of the ravine, how it really was has been explained.

†We shall not attempt to inquire whether that continued to be *Marshal Bazaine's* intention on the afternoon. According to their statements before the court, the commanding generals had no other plan; Ladmiraault's action is not otherwise intelligible.

on the 16th, he should rather have endeavored to withdraw toward the interior by every available road; nor can it be denied that he might have done so until noon on the 17th, since up to that hour the Germans would not have been able to renew their attack. During this space of time Bazaine might have gained a start of 30 kilometers, and whether or not he could have joined hands with MacMahon depended on the marching powers of his army. However poorly Bazaine may have been informed, he could not but understand that if he remained victorious on the 16th and failed to march away at once, he was certain to be assailed by superior forces during the next few days. For to the south of Metz, where the Germans were advancing on a broad front, there was nothing to oppose them.

In judging the course of events, the strategic situation must be kept in view. Bazaine had been brought to bay, he had been forced to a bloody battle, his plans had been disconcerted, and he allowed himself to be influenced by the result of the battle to lean on the fortress of Metz.

While on the French side it was necessary to be victorious—i. e., to reconquer the battle-field of the 16th and to regain the Vionville—Mars-la-Tour road, the German task was to forestall the enemy and to have superior forces on hand for the next few days for the purpose of winning the tactical decision in battle. The method depended entirely on the enemy's action; the object could not be gained by purely defensive action, the offensive alone could vouchsafe it. The question was so to gauge the attack as to remain sufficiently strong for defense of what might be gained. That was done by the 5th and 6th Divisions. To be sure, they were more favorably situated after 4 p. m., as no offensive was launched against them after that hour. In battle it is sound to assume the enemy as acting in the manner one

would adopt if in his place. His aim should naturally have been a tactical victory on his right, and the German aim to prevent such a victory. If in doing so we exhausted ourselves, we would be facilitating his task; if we remained on the purely defensive, we would not be giving him enough to do. Action was therefore called for on the German side, *offensive* action, but not without due heed to the smallness of the force on hand. That was not done; the 20th Division failed to attack altogether and the 38th Brigade was destroyed at the *decisive strategical point of the battle-field*.

The order for the X. Corps to attack was perfectly proper under the circumstances; the execution was the duty of the subordinates, whose eyes should have supplemented those of the commanding general. In view of the smallness of the available force, it was evident that the enemy could not be driven from the Height 846—Greyère Ferme.

VII. How Should the Attack of the 38th Brigade Have Been Arranged?

1. The order should have stated: The brigade will attack; line of direction is Height 846—Greyère Ferme; northern limit of the attack is Contour 780. Communication with the Tronville copse and with the Seventy-ninth, which advanced to that point.

2. The signal for the attack will be the advance of the 20th Division.

3. Execution. (a) 2 P. C. occupy Mars-la-Tour and prepare the village for defense.

(b) Opening out the brigade and wheel to the left.

(c) The brigade commander takes station north of Mars-la-Tour.

(d) Battle formation and deployment of skirmishers on the Vionville—Mars-la-Tour road, clearing away ob-

structions, advance to Contour 780, halt. Distribution of the troops from west to east:*

On Height 795:

5th—16th, 6th—16th, and a battery;	
then 7th—16th, 8th—16th, 1st—16th, 2d—16th, 3d—16th,	Bois
4th—16th.	de
1st—57th, 2d—57th, 3d—57th, 9th—57th, 10th—57th, 11th—57th,	Tron-
4th—57th, 12th—57th,	ville.

The average distance between Contour 780 south of the brook and the same contour north of the brook is 500 meters. For our then arm, this distance was too great, and a fire action could not be conducted with effect. If we could not entice the French to come farther to the south, where we could better deal with them, there remained the possibility of maintaining a careful fire, during which our losses would have been small and which would have *accomplished our object*. And up to that point our losses had in fact been small; they became great only on the ridge.

(e) One battery to take position north of Mars-la-Tour.

II., I.—16th and I.—57th could approach under cover; F.—57th was less favorably situated. None but skirmishers should therefore have been thrown out on the exposed plane; in other respects the artillery should have maintained the action.†

(f) F.—16th as reserve at Mars-la-Tour.

All these arrangements could have been made, but they could not have been directed and watched by the brigade commander. In case the enemy failed to come forward, I.—57th might have been pushed forward to the bank and hedge 100 meters south of the brook, and I.—16th might have been sent forward an equal distance to

†We know that 24 guns, under Colonel von der Goltz, were here posted. Compare page 132.

*The Companies 4th—8th and 4th and 12th—57th formed a second line, and were posted in rear of the companies underneath whose numbers they are placed.

the west under cover along Contour 780; these movements might likewise have been *ordered and controlled by* the brigade commander, but that was the limit. For as soon as the infantry came on the plateau, the transmission of orders would become impossible and superior direction would cease altogether. It was absolutely necessary that the brigade commander should retain a reserve of infantry, the fighting power of the 1st Guard Dragoons for such a purpose being too limited and one-sided.

These battalions, having some cover, could probably have held this extent of ground even against great superiority of force, in proof of which we may accept the action of the same troops against even greater superiority at Beaunella-Rolande, when the bones of their best men were bleaching on the field of Mars-la-Tour, and when the remembrance of that day still clung to them, a fact not calculated to increase their *morale*. The supporting companies should have been brought up close to the skirmishers, and with the open field of fire of the plateau in our front, we might have awaited the events with confidence. No decision would have been gained in that way. But it was *not to our purpose* to seek it; it was to our interest to fight a delaying action and to preserve our strength. In that case, 5 half-battalions and a fortified village would have stood where now there was a field covered with corpses, and no soldiers. Had the attack of the X. Corps on this part of the field been carried out on that plan, its preparation, execution, and results would certainly have been more in keeping with the general situation than it was now, when the left of the *exhausted army* lacked all support and was deprived of infantry whose presence to the end of the battle was indispensable.

All these measures would be equally practicable with smokeless powder.

VIII. Tactical Comments.

The case will be rare where a brigade of 5 half-battalions is charged with a duty like that at Mars-la-Tour; still rarer are instances which, like the one before us, afford an opportunity for examining into the suitability of this or that tactical form in the attack and drawing conclusions. One thing, however, which no power on earth, no sophistry, can expunge from the pages of history: the 38th Brigade carried the attack forward without check until it intermingled with an enemy doubly superior in rifles and doubly superior in guns. It accurately preserved the direction indicated by the division commander, and, as a brigade, remained within the limits of the space assigned to it in the battle. Whatever may be advanced against some minor matters, the brigade did accomplish what on all other occasions failed against the imperial army: it carried an *attack en masse* over the open field, though using antiquated forms. I vividly remember the words addressed by Colonel von Cranach to the assembled officers during the mobilization of 1870, when urging them to practice their companies. Among other things, he said: "The French are not going to attack; they will wait for us in long lines. They will let us come on before advancing themselves. They have abandoned their offensive tactics and lay their stress on fire tactics. Their fire-arm leads them to that. You should therefore industriously practice a lively and vigorous advance, so that we may somewhat counterbalance the inferiority of our arm by rapidity of movement."* The hint was more significant than any one, the

*On July 18, 1870, Lieutenant-Colonel Count von Waldersee, then military *attache* at Paris, made full written report to King William

speaker not excepted, then suspected, and we were soon to be convinced of its correctness. Even before the War of 1870, the opinion prevailed in the German Army that our then company column tactics were no longer applicable when opposed to the fire of the Chassepôt. While new forms were being studied, war was declared and the infantry took the field conscious of the inferiority of its arm and of its lack of practice in the attack *en masse*. We were sure that we would receive effective infantry fire at great distances, and had to be prepared to cross that zone without replying to the enemy's fire and under considerable losses. But however much fire-arms may be improved, it remains certain that the attacker who desires to beat down the defender and to occupy his position must *advance*, and through a distance at which the fullest effect may be expected from his fire—600 meters and more—depending on what may be tactically correct under the circumstances to produce the desired effect. The “how” of the advance and the “how” of the action at close range have changed, but both continue to exist. The French were the first to systematically practice long-range fire, and to apply it in the War of 1870. The French infantry was trained and skilled in it to a high degree. The French did not choose the battle-field of the 16th of August; they were forced to give battle against their will. It was due to *accident*, not to premeditation, that at most of the important points the battle-field was favorable to the effect of the rifle. It redounds to the glory of the French leaders to have discerned the advantages of the position from Height 846 to Greyère Ferme, and to have turned the same to immediate account. The attack of the 38th Brigade, on the

on the tactics of the French Army, which was printed and distributed among the troops. Everything turned out as Count von Waldersee had predicted, particularly in regard to infantry tactics, but the time was too short to modify our method of attack.

other hand, contains hints as to whether in the future such a zone of fire may be crossed without loss of all fighting efficiency. The questions are: 1. Was it mass fire with which Grenier's deployed division and the subsequently deploying division of Cissey greeted the brigade? 2. Could the fire have been increased as regards the number of rifles brought to bear? 3. May a better direction of fire and a more severe and more effective fire be expected from modern small-caliber arms? 4. Was the attacker covered with fire at long ranges? 5. Is the fire of masses effective at greater ranges than here?

To 1, 2, 3, 4, my answer is, Yes; to 5, No.

In order to illustrate the effect of mass fire by an example, the attacker should be assumed to be laboring under the most unfavorable circumstances. I have shown that the method of employment of the 38th Brigade was unsuitable, yet that attack is the most instructive as regards modern tactics.

1. When the 38th Brigade deployed for the attack at 4 p. m., the entire front from Height 846 to Greyère Ferme (fully 2500 meters) was held by troops of all arms. Grenier's division stood in deployed lines, in two tiers, one in rear of the other (Heights 780 and 846). The former was crowned by dense skirmish lines (2 regiments, Nos. 13 and 64), the latter by the remainder of the infantry and by the artillery of the division. Both fired incessantly, and as we reached the Vionville—Mars-la-Tour road both infantry and artillery fire reached us. Several men fell on the road, and

*According to my observations, comparisons, and inquiries, large bodies of Cissey's division did not take part until we had crossed Contour 780; up to that time the fire we received from the direction of Greyère Ferme was restricted to the 38th Regiment, the 5th Chasseur Battalion, numerous artillery, and, it would seem, 2 mitrailleuse batteries, whose presence was signified by their singular crackling roll.

the leader of 4th—57th, First Lieutenant von Boreke, was wounded there. At first we could distinguish the rapid fire of the skirmishers from the volley firing of the closed troops. Up to Contour 780, H., L., F.—16th and L.—57th found cover in the meadow-bottom, but the fire never slackened.

2. The front of 2500 meters was occupied by two divisions, all of one and one-half of the other being deployed and firing—i. e., 11,925 rifles;* between them 72 guns were in action, including 12 mitrailleurs. Leaving Legrand's cavalry division out of consideration, we find for the 2500 meters, 5 men per yard in a defensive position.

3. A more severe, better directed mass fire, and one more effective, owing to flatter trajectory, greater penetration and accuracy, than on the 16th of August, is practicable, although there was no pause whatever and the fire retained its intensity up to the moment when the French infantry attacked; we could distinguish, however, that the volley firing became more irregular, and toward the end became irregular rapid fire. The latter feature may be considered the rule in future.

4. From the time when we crossed the Vionville—Mars-la-Tour road, the enemy maintained an uninterrupted fire. The distance from there to Contour 780 (north of the ravine) is 1500 meters; to Height 846 it is 2500 meters. It was therefore a mass fire at long-range, *as we understand it to-day*, and the attacker was covered with fire at 1500—2000 meters.

5. Even with modern arms, a mass fire at greater ranges is not to be recommended. The following general considerations are stated in this connection: 1. The en-

*In 1875 General Clissey stated to the Chamber that his entire division was engaged. It is not clear whether he thereby meant the fire action or the subsequent advance of the division.

tire field of fire was swept, with the exception of the low meadows extending around the north of Mars-la-Tour (II., I., F.—16th, I.—57th), otherwise was most suitable for effective mass fire at long range. 2. Of the 23—2500 meters of swept ground, the brigade traversed: II. and I.—16th, 1600 meters; F.—16th, I.—57th, F.—57th, and 2d P. C., 1400 meters.

All these circumstances combine to make it an attack with great numerical inferiority, with inferior armament, and on ground and in a general state of the battle without a parallel.

We expected to take the enemy in flank, but were taken in flank ourselves and rolled up from left to right.

(a) *The Tactical Forms Employed.*—So far as I could ascertain, they were as follows:

At 2500 meters:

II.—16th. Company columns.

I.—16th. Company columns (3d, 2d); in rear the half-battalion 4th—1st.

F.—16th. Company columns (11th, 10th) in rear the half-battalion 12th—9th.

I.—57th. Entire companies deployed as skirmishers (1st, 2d); in their rear 4th, 3d—57th in half-battalion and, subsequently, at 1500 meters, in company columns.

F.—57th. Double column on the center. 100 meters south of the road Vionville—Mars-la-Tour change to half-battalions, 11th—9th and 12th—10th. (In this battalion the leaders of the 9th and 12th Companies were first lieutenants; of 10th and 11th, captains. In order to have each half-battalion commanded by a captain, the battalion com-

maunder made the formation 11th, 9th—57th, 12th, 10th—57th.

2d, 3d P. C. Company columns at 1500 meters.

Advance in one front, both regiments side by side; on halting in the enemy's front,* 8th—16th; 4th—16th; 12th, 9th—16th; 11th, 9th—57th; 12th, 10th—57th were brought into the first line.

Half of the companies of the brigade had deployed their platoons as skirmishers; the following remained closed throughout the action: 12th, 9th—16th; 4th—57th; 3d—57th; 11th, 9th—57th;† 12th, 10th—57th; 2d, 3d P. C.

(b) *Duration of the Attack.*—I assume that we made 1000 meters in 12 minutes. The average ground gained to the front by all the companies was 2000 meters,‡ those on the right having to extend more and more in that direction. The attack was brisk. Counting in the delay caused by the

*Compare Sketch III.

†The entire front of F.—57th was covered by the skirmishers of 1st—57th, extending as far as the Bois de Tronville. According to Lieutenant Schreiber, then adjutant, the two half-battalions of F.—57th joined the skirmishers *in line*. They threw out no skirmishers throughout the action, an unheard-of case, at any rate under such circumstances, which requires explanation. The battalion commander wanted to get the battalion near the enemy as quickly as possible, and much time had been lost by the wheel. The movement now was so accelerated that it was impossible to throw skirmishers to the front, and as Major von Medem saw skirmishers in his front, none were thrown out from the battalion. Half-battalion 11th, 9th—57th fired two or three volleys before reaching the line of skirmishers, advanced with drums beating, and reached, like Half-battalion 12th, 10th—57th, the *southern* edge of the ravine. The latter did not fire at all while advancing, and only fired a *few* shots on the retreat. The two half-battalions had barely reached the southern edge of the ravine, when the French troops, who were lying on the further edge, *unexpectedly* burst on them out of the dense smoke. Here the fusiliers scattered. F.—57th was the only battalion that found no cover of any kind; it remained but a brief moment in the firing line and lost 10 officers and 386 men out of 900, the 10th Company alone losing 3 officers and 130 men.

‡Counting from the starting-point southwest of Mars-la-Tour.

removal of the obstacles in the meadow-bottom, I make it 30 minutes until the center (F.—16th, L.—57th) reached the hedge and bank. In addition, 30 minutes for the entire line, during which period the action was stationary, and 30 minutes for the retreat. I thus make the total duration $1\frac{1}{2}$ hours. The remnants of the brigade were probably assembled south of the road Mars-la-Tour—Vionville, after 5:45 p. m.

(c) *Expenditure of Ammunition and Fire Effect.*—The calculation of the ammunition expended is very difficult, as I did not find reliable data in this respect in the reports and records of the troops. The opinion was general that *we were hors-de-combat before we fired a shot*. Hence, we shall have to content ourselves with a probability.

The 5 battalions moved into battle with a strength of 95 officers and 4546 men.*

The losses until the east-and-west ravine was reached were probably 20 per cent; hence the number of rifles at that point was 3640; not a shot was fired by 12th, 9th—16th, 4th—57th, 3d—57th. Estimating these organizations at 909 rifles and deducting therefrom 20 per cent for losses, there remained 2910 rifles in action. According to the statements of several officers, the companies of F.—57th may have fired between 3 and 5 rounds. Assuming 4 as the average and 10 for the other troops, we have $21,850 + 2908 = 24,758$ shots. At this point we have a further diminution from losses which reached 53 per cent during the action, and since the greater part of the same was inflicted on the retreat, further estimates become very unreliable. Nevertheless the total expenditure of ammunition of the brigade may be placed at about 18—20,000 cartridges.†

*Official Account, page 625, I.

†Major Meissner states in the *Militär Wochenblatt* of 1891 that

The expenditure of ammunition on the part of the enemy could not be ascertained. But it must have been very great during that brief space of time, as General Ladmirault (IV. Army Corps) reports on the evening of the 16th that he is short of ammunition. On the 17th many cartridges were found along the French positions, which served to indicate the extent of the enemy's line. Some men of Grenier's division stated that they had fired as many as 150 rounds, and that their rifles were so hot they could barely hold them.

Assuming that the enemy expended but 80 rounds per man, the 11,925 rifles in action would have fired 954,000 shots. According to this, 1 bullet out of 452 reached its billet* under the following conditions: long range, flat trajectory, absence of cover, employment of closed columns and lines on our side; artillery and mitrailleuse fire not included in the calculation. To be sure, we must consider that many men were hit by more than one bullet; indeed, dead and wounded with four and five shot wounds were not at all rare. Of course, this calculation is but an estimate, but it is not saying too much, that the modern rifle, with its long range, its greater accuracy, flatter trajectory, and greatly increased penetration, would at many points have trebled or quadrupled the losses, if the same tactical forms were used again.

some men of the 5th Company fired 30 rounds. Admitting the statement to be correct, the total result is but little affected thereby.

*This calculation is based on the figures in the chapter on losses, V., (f), page 187:

Regiment No. 16, 48 officers, 1380 men; Regiment No. 57, 24 officers, 653 men, among them one man of the 5th company; making 72 officers, 2033 men. Total, 2105

There were placed *hors-de-combat*:

	Killed or Wounded.		Missing.		Remarks.
	Officers.	Men.	Officers.	Men.	
1st—16th.....	7	139	1	423	Cover as far as Contour 780.
2d —16th.....	5	*?			
3d —16th.....	5	131			
4th—16th.....	3	109			
5th—16th.....	2	47			
6th—16th.....	4	80			
7th—16th.....	2	?			
8th—16th.....	3	?			
9th—16th.....	5	?			
10th—16th.....	4	128			
11th—16th....	4	134			
12th—16th.....	4	94			
	48	1313	1	26	Over open ground both ways.
1st—57th.....	4	70			
2d —57th.....	3	90			
3d —57th.....	3	56			
4th—57th.....	3	51			
9th—57th.....	3	56			
10th—57th.....	3	130			
11th—57th.....	2	92			
12th—57th.....	3	108			
	24	†653			
Total.....	72	1966	2	449	

Of those missing from the 16th Regiment (1 officer, 423 men), 1 officer and 356 men returned from captivity on the 25th of August, 1870;‡ the remaining 67 have to be added to the losses of the regiment in the battle, which thus

*Companies marked ? lost more than 100 men.

†The figures given in the first edition of the Abridged History of the 57th Regiment, by Capt. Hilken, have been correspondingly amended in the second edition of 1889.

‡Page 278 of the History of the 16th Regiment.

reach a total of 48 officers and 1380 men. It is probably the greatest loss suffered by any regiment in 1870-71. The total losses of the 5 battalions from the enemy's fire therefore amount to 72 officers and 2033 men, not counting prisoners.*

The first reliable account of the end of the battle I received through a letter from Colonel von Cranach,† which had been written a few days after the battle with a view of being sent to von Bernewitz, von Nerée, von Borecke, and to myself. It said, among other things: "It was on the succeeding day that I fully comprehended what the regiment [57th] had done, and I must say that the men fought like lions; I am now all the prouder of being at the head of the regiment. . . . Brave Erhardt [commanding the 12th Company] died soon after the battle, and the same fate seemed likely for brave Schreiber [adjutant of F.—57th]," who was shot through the right temple, the bullet coming out on the left, destroying the right eye and severely injuring the left, and he had another shot in the foot. He was given up by everybody, but the Lord directs. Schreiber was restored, is now captain on the retired list, and for the fourth time representing the district of Nordhausen in the Diet. He is the same man who was mentioned at Probus as ensign, and his wound is a case in point

*The singular ways of Providence are shown by the following: Among the killed was Lieutenant Weinhagen, who was adjutant at Gräfrath. On the completion of the mobilization he had taken a leave for the purpose of being present in at least one action, after which he intended to return. He joined the regiment on the 11th of August and was assigned to the 12th Company of the Fifty-seventh. When we were marching to the battle of the 16th, he was full of happy anticipation; but the first action, by which he meant to satisfy his ambition, which we can easily understand, cost him his life. Oddly enough, warrants for his arrest, giving his personal description, were issued for this brave man long after he was slumbering under the soil of Mars-la-Tour.

†Lives now at Berlin and is general of Infantry.

in connection with the experiments made by Professor Bruns and others, to be referred to later on. The wound of entrance can barely be discerned to-day; that of exit, which was somewhat larger, is more conspicuous.

The 5 battalions of the 38th Brigade went into battle with 95 officers and 4546 men. They lost 72 officers and 2033 men in killed and wounded—*i. e.*, 74 $\frac{3}{4}$ per cent of officers, and 45 per cent of men, not counting those captured.

The French IV. Army Corps has stated its losses on the 16th of August, as 200 officers and 2258 men. These figures we have reduced on page 190 to 147 officers and 1722 men, inclusive of Legrand's cavalry division; these losses are great in view of the brief fire action on the part of the 38th Brigade and of its very small expenditure of ammunition. The greater part of these losses is probably due to our artillery and to the Seventy-ninth. In order to elucidate this and other matters, I addressed myself to Generals Ladmirault, Grenier, and Cissey; the first adhered to the official figures, the other two failed to answer.

It is probably safe to assume that one-half of our losses were incurred on the retreat; hence 5 battalions lost 36 officers and 1016 men, while advancing 1500 meters, and before the retreat. The brigade therefore arrived within then effective range of the enemy in good condition, notwithstanding the long attack movement under the most unfavorable circumstances. The tactical forms employed—*i. e.*, advance without halt and without fire, with skirmishers and company columns—proved adequate under long-range and short-range mass fire, it being moreover a frontal attack taken in flank by the enemy.

The defeat of the brigade, at the same time, was due more to its numerical inferiority and lack of knowledge of the enemy, than to its tactics. The ground was as unfavor-

able to an attack as it possibly could be, and as suitable for mass fire at long and short range as though it had been specially prepared; yet in this flanked frontal attack up to the retreat the losses were no greater than in other modern battles assuming the figures handed down to us to be correct, and even smaller than in many a battle of Frederick and Napoleon where the decision had to be gained by assault.

The circumstances can therefore not be called extraordinary. On the other hand, do not the battles of Beaune, of Villiers, of Bapaume, and on the Lisaine go to show that the opponent suffered similar losses against us? To be sure the Germans were tactically much the superiors of those troops of the enemy.

The picture I have presented of the battle, and the manner in which I have endeavored to analyze it and to explain its details, should prevent false conclusions. The small-caliber rifles, etc., have furnished the opponents of all closed formations with new arguments for their theories, to be sure, but it is by no means certain that there will not be situations in the future where it will be possible to advance in closed formation to within 6—400 meters of the enemy.

IX. Why Was the Charge of the 1st Guard Dragoons Successful?

Everything I have seen, heard, and read of the Austro-Saxon troops cannot but impress their friends and enemies alike with respect for their discipline and for their behavior on the battle-field. In 1866 the Saxons, for instance, preserved their order and tactical formations under destructive infantry fire, and it was only the defeat that destroyed them. It also appeared that wherever they were temporarily victorious, their spirit and discipline did not degenerate into reprehensible and low outbursts of hatred or

other wild passions, even when the men were not under control or under observation. Tactical reasons never ceased to predominate, and the powerless, wounded or unwounded, prisoner was sure of kind treatment.

Our experiences on the battle-field of Mars-la-Tour were different. I am glad to acknowledge that we then held our opponent in military and moral respect, knowing that the French nation considered itself at the head of civilization. Hence, we could not well entertain a poor idea of the spirit of the imperial troops, and our disappointment was therefore all the greater. I would pass the matter over in silence were it not that it is instructive.

Sitting at the green table one looks at such matters differently than when lying wounded on the battle-field. It is but natural that in the latter case one may make mistakes, but even the quiet of the study, where reason is expected to master passion, is no bar to errors. There are those who think that the imperial French infantry was tactically superior to the German; among them are very influential Austrian officers, and even the Germans do not deny the French superiority in the employment of fire and in village-fighting, where the Frenchmen can show his fine qualities. In other respects, also, the German infantry committed many tactical errors in the first period of the war, but what was the course of the French attack here?

After the 38th Brigade had been swept away, it was followed first by a division, and then by half of another in several lines. Neither had effective infantry to encounter, still the advance was clumsy and slow. First came a skirmish line, in which everybody commingled, in which everybody yelled, in which there was no tactical order, and which, moreover, halted repeatedly, although there was no resistance. It was followed by a second skirmish line, and the

latter by battalions in line, with their eagles. More I was unable to observe. The artillery *did not join* in the movement and remained in its position, with the exception of one battery of Cisse's division, which followed as far as the northern edge of the frequently mentioned ravine and opened fire on Tronville. The first skirmish line fired, *mostly from the hip*, without aiming; both skirmish lines passed over us, and the battalions halted on the line where most of our dead and wounded were lying, 150—300 meters south of the ravine. The distances between their lines were very unequal, and during the advance portions of the first two lines became intermingled. The French had probably arrived within about 150 meters to the north of Contour 780, when they were attacked by the 1st Guard Dragoons, and now there arose an indescribable confusion. Both skirmish lines rushed to the rear—throwing away rifles and equipments; other skirmishers laid themselves down alongside of and between us or endeavored to form groups; the men were firing in all directions and an irregular fire came from the closed battalions. Considering their small strength and the unfavorable conditions of the attack, it sounds incredible that 3 squadrons of the 1st Guard Dragoons rode through three lines, threw two into flight and the third, closed one, into disorder, and staggered all three of them. *Here is the point, and however much has been written on that glorious event, not a single officer has tried to find the explanation.* I shall give it; it is simple indeed. Had the French infantry been in possession of that which an efficient body of troops cannot do without—viz., tactical order and discipline, no cavalry could have gained the least success under circumstances where the unobstructed view of the field precluded *anything like surprise*. Yet the surprise was complete; hence the confusion and stupefaction

of the enemy. That is what gave the dragoons success. How could they have surprised the enemy? Because the hostile infantry masked the greater part of their own rifles by an advance of the 13th and 43d Regiments from the left of Grenier's division in a sharp westerly direction toward Mars-la-Tour. Forming an acute angle with the French front, they prevented the latter from firing and lent their flank to us, and their rear to the Seventy-ninth, to portions of the Fifty-seventh in the Bois de Tronville, and to the artillery southwest of the latter. To these tactical errors are to be added other circumstances which tended to lighten the work of the 1st Guard Dragoons: namely, the boundless disorder, the lack of discipline, the bad spirit of *that infantry*, the helplessness of the officers and the lack of heed paid to the enemy. When the skirmishers of the 13th Regiment joined those of the infantry in the first line—right over our dead and wounded—it was as though the happy meeting and victory were to be celebrated together; there may have been cause for that, to be sure, but they were not yet masters of the battle-field. They shouted, called, and drank to each other, waved their forage caps, and occupied themselves exclusively with the unfortunate victims of the battle, heaping all kinds of ignominy on them. Whole groups stopped at a prostrate Prussian, and what did that infantry do? It polluted its name by indescribable cynicism or by brutalities with which it threatened our wounded.⁶ The first greeting presented to most of us was the muzzle of a gun, the coats of most of us were torn open from top to bottom, most of us were robbed of our possessions, and if that had only been the worst! Entire companies disappeared as tactical bodies, the men picking up Prussians that were not yet dead and carrying them off as *prisoners*, or unsaddling our officers' horses which were lying

here, and taking saddles and bridles to a safe place. I myself was spared any molestation, because a French officer took charge of me; but while giving me a drink from his canteen, his men tapped him on the shoulder in a most familiar way, as though to express their disapproval. That was the reason they felt themselves masters of the battle-field, and occupied themselves with things which should not have been tolerated; order was destroyed, and in the midst of this heedlessness burst our cavalry; it was successful and was bound to be. I would not, however, advise it to attempt the same thing against some other infantry, for it would not check them for "10 minutes." This cavalry did not get farther east than to the extreme right of 3d—57th; there it wheeled to the left, rode through and confounded the lines along the entire front, and, passing around the north of Mars-la-Tour, disappeared behind the village. Our front was now clear, and those who could crawl to the rear saved themselves, as a perfectly mad fire from the right front was sweeping for some time over the battle-field, on which not an enemy was standing. The statement is not correct, that the French infantry did not again advance, as might be inferred from all books dealing with this event, and as is expressly stated in the Histories of the 16th and 57th Regiments, which go so far as to assert that the hostile infantry recrossed the ravine in consequence of that attack. On the contrary, as soon as the dragoons had disappeared, it again advanced from the right, utilizing the time to police the field. In this period falls the capture of the brave horseless or wounded dragoons, and of many officers and men of F.—16th, I.—57th, and F.—57th. The capture of the dragoons in itself proves the accuracy of my statement. How could they have been captured if the French had run away before them across the

ravine? It was not until later that a general withdrawal to the original position took place in consequence of the appearance of Rheinbaben's Cavalry Division at Ville sur Yron. The withdrawal was made in the same careless manner as had been the advance; the lines were without any protection and simply faced about. On our extreme left they were preceded by a long dark column: it was our captured men. It is therefore due to the bad spirit and the lack of discipline, in addition to tactical errors, that the French failed to gain anything beyond the direct results of their fire.

PART II.

PSYCHOLOGY AND TACTICS.

I. General.

The will is the power that directs the masses, and discipline is the medium through which the will is brought to bear on the men; a clear and determined will and ruthless exercise of discipline are in battle the most valuable qualities of the lower officers, whose constant endeavor should be to preserve the ascendancy over their subordinates by means of their higher moral strength and their tactically trained intellect. The most perfect arms may *modify*, but will never *abrogate*, that law, and those alone will travel the right road in tactics who keep in mind that many thousands of men are involved, who all, however different they may be in other respects, have in common the natural egotism *which aims at the safety and preservation of one's life*. By the side of the material egotism there is a transcendental, moral, national—in brief, a psychical one, which may exert a powerful influence. The higher the development of the latter, the better will it rise above the impulses of material egotism. Mohammed showed himself the type of an army psychologist in teaching that the beyond is all, and the present life nothing. In any nation this moral egotism can only spring from conditions and causes germane to the individual; it cannot be imparted by influences operating from without. Tactics should be in keeping with it, should be national. There are times when the great mass is impelled by the motive of the war, and such a time has been mentioned (1870). Although this is an exception, still it will

be necessary in tactics to reckon with a feature which formerly was not so dominant as it may be expected to be in the future—i. e., the increase of the national sentiment. More than that, in the case of our prospective opponents, the Russians and French, there is a special psychic augmentation in the shape of hatred which has been artificially created and nurtured through a whole generation. On the part of the French the hatred arose from the defeats suffered in 1870-71; on the part of the Russians, from their discontent with the results of the victorious War of 1877-78. Moreover, in both nations, the military spirit has grown much, because all their hopes are based on their armies. In Russia the political hatred is fed by the orthodox clergy, in France by the Roman Catholic clergy, and the Czar is not only the political, judicial, and military, but also the religious, head of the state. The moral strength of the army is bound to be benefited by both of these sources, and the future war is bound to be a national war, a war of the people. The armies of nations aiming at ends whose accomplishment they believe indispensable for the maintenance of their political honor, are likely to be moved by more effective moral influences than the armies of nations which are politically satiated, so to speak, and merely bent on the defense of their possessions, their position among the nations, etc.

This constitutes a matter doubly important in tactics, where the personal influence of the superior can no longer exercise the sway it did in former tactics. Much will therefore in the future depend on the moral strength possessed in each case by the soldier; indeed, the tactics of masses of skirmishers will be feasible, if at all, chiefly because grounded on this basis. The increased sense of personal honor and the principle of national honor are alone able to

counterbalance to a certain degree the lessened personal influence of the leader over the masses. Armies will be opposed to each other more equal in strength, condition, armament, and training than ever before, and each army is bound to display those superior qualities which live and operate in its nation. National psychology thus becomes a true element in future war, and, naturally, also in tactics. Every officer should industriously labor to understand it thoroughly, and that opponent will have a great advantage, so far as tactics is concerned, who has secured for himself the superiority in moral influences by peace training. I am abstaining from a comparison between these forces of the prospective opponents, because it is so easy to err; but everything should be done to strengthen the moral spirit. Tactics would have light work, if we should ever reach the stage where every man would regard the assailing of our national honor or the violation of our territory as an attack in an equal degree, and where every one would be urged, *from his own inner motives*, to demand satisfaction, and to offer life or limb to obtain national redress. This cannot be hoped for to-day, for in all modern nations a continuous and bitter struggle is waging between the material and moral egotism. The entire modern society is embroiled in it, and the discontent with the existing social, political, and religious conditions absorbs a large part of the moral strength. Society and the people, the state and its institutions, are exhausting themselves in the mutual struggle and consume most precious forces. Some nations show a certain intellectual and political apathy, and it is doubtful whether their national sentiment can mature those advantages for tactics which are to be expected from healthy moral conditions. Even at times when flaming patriotism

sways every man's heart, the enthusiasm of the great majority grows dumb at the door of death, material egotism gains the mastery over idealism, *bodily* weakness over intellectual strength, and the instinct of self-preservation over the spirit of self-sacrifice. A small minority alone preserves its enthusiasm, and among the many vexations, fatigues, and deprivations of war but few of this minority retain the same buoyancy of spirit and will-power and the same resoluteness in all dangers. In my own case I admit that these forces changed just as does one's disposition, the condition of the body, and the atmosphere in which we live. The low egotism knocks many times, and man, clinging much to the material world, much more than is believed by non-penetrative persons, frequently becomes more or less the "personal battle-field," where human weakness struggles against noble and sturdy impulses. Some acknowledge it; others are ashamed to do so. It should not be covered with silence; on the contrary, it should be particularly brought out, as it is only when every one understands it, that we reach healthy views and the means to conquer ourselves. Then collapses the current theory of the soldier's courage; it is a myth, and, as a rule, cannot be anything else; *manful examples alone will hold a great and, according to my experience, calming, influence over men with the sense of honor.* In the school of war man gathers warlike experience; there the leader continuously disciplines his mental, moral, and physical powers in reaching for higher aims and in looking upon war from the standpoint of the artist. It may be stated as a rule, that in war courage increases in *few*, not in the great mass, and these few, officers as well as men, are the soul of the troops. The most courageous soldier is the one who has not been under fire, since peace habitudes may be so strong in him that he will for some

time move in battle as on the maneuver ground. But not always; it will only be so long as he does not know the danger into which he has been led. As soon as he becomes conscious of the danger, he is beset by uneasiness for his own self instead of finding in himself courage and strength for the *cause* and for the *idea*. When an advancing body of troops suddenly stops, it cannot be explained psychologically in any other way but that the men have become conscious of the peril of the situation; these are decisive moments which are overcome only by a few strong spirits of sufficient vigor to revive by their own will-power the faltering courage of the troops and to carry them over such moments of weakness. Between these moments, however, and the phenomena arising from a consciousness of numerical inferiority, there is a vast difference.

The brigade which carried out the attack on Height 846 would hardly repeat it in the same manner now that it knows the danger. No human power could have made it rise and advance after it once lay down near the enemy. There are limits in tactics where will-power fails and where personal ascendancy is no longer effective, and the appreciation of these limits on the part of officers and men is a purely instinctive one, springing, as it were, from the recognition of the enemy's materially superior fighting power—*i. e.*, of their own *tactical inferiority*. It cannot be explained in any other way, that in such moments leaders and men suddenly turn about without previous arrangement, without orders, without signal of any kind, etc.; that a closed body of troops which at one moment exhibits the finest of bearing, completely collapses at the next like a house built of cards. Passion, enthusiasm, and the courage of the individual should not, therefore, be solely relied upon, but it should be borne in mind that as regards tactics, the major-

ity of the men remain indolent—for anyone who acts not spontaneously, but merely upon exterior impulses, may in so far be called indolent. In keeping that in mind, despite universal liability to service and other assertions, we shall best serve our king, country, and nation, and be apt to take the correct steps in an emergency. What officer who has been exposed to destructive fire, is willing to assert that it did not cost him a struggle to rise from behind the cover and to rush forward over the open field where death and destruction were reigning? Who will deny that the same readiness of resolve cannot be the gift of the majority of the men; that, unlike the officers, they do not act spontaneously, but in response to an exterior impelling force? Who has not observed that the signal of the whistle, though heard, was unheeded; that when the men were under cover, but few followed resolutely from the beginning when the officer rushed to the front, others slowly, others not at all, and that the entire advance came to a stop as soon, for instance, as the leading officer fell under the enemy's fire? We have musketeers behind us, not heroes. Under the modern destructive mass fire, it is not only difficult to cause the swarms of skirmishers to quit their cover and to carry them forward, but the combined leading of many small detachments is much more difficult than formerly, and on open ground it will frequently be found impossible. As striking illustrations, we have selected the two examples (Probus and Mars-la-Tour), separated by an interval of four years, which took place under circumstances resembling each other in many particulars. While in the former attack the army of the Elbe retained unbroken control over the divisions, brigades, and even some battalions and companies; while division, brigade, and regimental commanders were from beginning to end with the skirmish lines

or with their supports; and while, for instance, Major von Thiele, general staff officer of the 14th Division, traversed the distance from the captured village of Problus (27th Brigade) to the southeast and back in close proximity to the enemy's entrenched position, in order to deliver to the 28th Brigade the order to attack the wood of Briz; while the 28th Brigade executed a difficult wheel under effective fire for the purpose of attacking the wood; while the connecting link between leader and combatants never broke—at Mars-la-Tour the entire brigade quickly slipped from the hands of the superior leaders. What was practicable four years before on the same kind of ground was impracticable then within the zone of the mass fire of the breech-loader, and it will remain so forever under like circumstances.

In all fire tactics the knowledge of the failings of human nature heretofore called for the *longest possible* keeping together of bodies controllable by one hand; to-day the small-caliber rifle by no means relieves us from that principle, it compels us rather to apply it intelligently if there is to be any control at all. If the latter is deemed requisite, the means must be shaped accordingly, for whoever wants a certain end necessarily wants the means thereto.

No tactician should contend against this principle, and it should be left to the artist to shape the same into a useful and sufficient tactical means under the vicissitudes of the battle-field. It requires a clear, tactical eye, rational peace experience, a knowledge of the ballistic qualities of the arm (infantry and artillery), etc., matters not always found where modern conditions require that they should be, in the ranks of the subordinate leaders. Since even enthusiasm fails to remedy the failings of human nature, it follows that modern tactics requires on the part of all leaders a higher degree of knowledge and ability, of initiative and

vigor, of insight and perseverance than formerly; that, in a word, tactics has become more *psychological*. As compared with the action in its entirety, attacks on positions, as at Probus, Mars-la-Tour, and St. Privat, will be *exceptional*; yet with intelligent preparation and utilization of the terrain they might be carried out to-day despite small-caliber rifles, etc., without exposing us to annihilation; and rarer still will be the case, as at Mars-la-Tour, of a single brigade flinging itself against an impregnable position without making the attempt of acting with one of its battalions against the enemy's flank or without being supported by such a flank movement on the part of troops engaged alongside. That which the 38th Brigade, on August 16, 1870, the 1st Brigade of the Guard at St. Privat, and the various brigades at the Mance ravine on the 18th of August, wanted and were ordered to do, was bound to fail because based on a misconception of the situation. It would have been equally disastrous in the days of Frederick or of Napoleon as in 1870, because not in keeping with tactics. A frontal attack under such conditions will never lead to a decision; it will rather have to be brought about by the troops on the right and left; and just as the 38th Brigade was bound to succumb before superior hostile forces in a strong position, so it is certain that under like circumstances, at St. Privat, the Guard Corps would never have taken the village by assault had not the turning movement of the XII. Army Corps gained that decision on the flank which could not be obtained in front. What a hopeless situation for the troops which are thrown against the front! No, not hopeless; as honorable as possible, as demonstrated, not by the leading, but by the bearing of the Guards at St. Privat and of the 15th Division at St. Hubert. They are called upon to bear the heaviest losses, and to hold out under a destructive fire; only to relinquish

the palm of victory proper to others. Their ranks are thinned every minute; at the seemingly opportune moment the enemy seeks to advance in order to crush the dross under his heel; then it is that troops show the stuff they are made of and of what they *must be capable*. They should not lose their *morale*, and in this respect they can be materially assisted by the superior leaders taking into consideration *the physical strength of the men*. When that is spent to the same degree as that of the 38th Brigade at Mars-la-Tour, a man is no better than a stick of wood, and can be kicked out of the way as easily; he can no longer defend himself. It is not the size of the losses that measures the value of troops; it is their behavior notwithstanding the losses—*i. e.*, the degree of their power of resistance and of their efficiency in action; in other words, their moral force is what tells. It in turn depends on the physical strength, and what the Guards were able to accomplish at St. Privat, because their physical strength was not spent, was bound to be impossible for the 38th Brigade at Mars-la-Tour, even had the numerical conditions been more favorable on both sides, simply because the brigade *was physically spent*.

II. Maxims.

From what has been said the following general maxims may be deduced:

1. Regard for human weakness, which seeks cover rather than exposure.
2. Selection of such forms for the attack as offer to the enemy the poorest possible targets, and granting to the individual sufficient freedom for the purpose of utilizing the terrain and his arm, for gaining a favorable firing position, and for obtaining there the superiority of fire.
3. The infantry attack is a conflict of masses of skir-

mishers requiring early and sufficient development of skirmishers and opportune arrival of sufficient supports. For the movement, the fire, the attainment of the position, the reinforcement, and the rush from firing position to firing position, there can be but one formation—namely, an open, single-rank line. There can be but one kind of fire; fire of skirmishers. That is the universal fighting method of infantry.

4. Disorder and intermingling of organizations become the rule. It is one of the foremost duties of the subordinate leaders to exercise such control as will best preserve the fighting efficiency at each point; hence an increase in the number of subordinate leaders is requisite.

5. In carrying out the attack there will no longer be successive arrays (*Treffen*) down to include the reserves; there will be nothing but opened single-rank lines; even the term "echelon" is antiquated. On the other hand, the "*Treffen*" are indispensable, previous to the deployment. The use of smokeless powder is presumed, of course, for the present generation will probably not fight with any other. The term "normal attack" should not be used at all, and the terms "long-range fire" and "short-range fire," in the sense of 1870-71, are simply confusing rubbish, the dispute as to their admissibility having been settled. Movement and fire are but the different forms of one act. As to the distance between supports, there is only a maximum limit, which may be deviated from, depending on the character of the ground.

6. Deployment, forming for attack, and execution of the attack are three separate stages for which some reglementary prescriptions are indispensable; otherwise, there would be no means of control in connection with a tactical division of labor, none for the organized action of the

masses of skirmishers, none for controlling disorder. Every brigade should strictly confine itself to the allotted extent of front. Within the brigade front and depending on the terrain, deviations from the ordinary extents of front are frequently unavoidable. They should therefore be permitted. When fighting in deep formation (*"aus der Tiefe fechten"*) the brigade front may, in the pitched battle, be extended to 1400 meters.

7. Frontal attacks over open ground are to be avoided as much as possible; if that is impossible, the forces employed should be so numerous that after suffering heavy losses, they still retain sufficient moral strength to hold out, and sufficient moral and physical (tactical) strength to resist. Hence proper apportionment of reserves, selection of a suitable position for them, and sending them promptly forward.

8. The attack proper, *the seizure of the enemy's position*, will usually require fresh troops. Unless a superiority of fire has been gained by the infantry and artillery, any attack is hopeless, and, moreover, the particular moment is difficult to recognize, and therefore also that for bringing up fresh troops, a duty exclusively belonging to the higher leaders.

9. The advance to be continued as long as possible without halt, at the same time utilizing every cover, for protection, not for a *prolonged stay*. This will in most cases be found practicable for swarms of skirmishers up to within 600 meters of the enemy; and at shorter distances and even in closed formations, when there is cover.

10. The fire action should be opened accordingly, and so as to cover the entire front allotted to the brigade.

11. All effective means should be employed for the rush forward; the best way is to carry the men along with

fresh troops, even if the latter be but hastily gathered squads; it will be practicable in most cases to bring them up at the right moment. If the field of fire is open, they should move in swarms of skirmishers only. How many rushes a body of troops is capable of making is very uncertain. We have no sufficient data on that point, and nowhere perhaps shall we meet with so many disappointments as in the advance by rushes, because it will be difficult in most cases to harmonize theory with the practical actual conditions. I place no great hopes on the advance by rushes, particularly when begun at a great distance.

12. Infantry is to be supported by a vigorous artillery fire.

13. If the enemy gives way, the victors should follow him up rapidly, but all the engaged troops which do not have an opportunity to fire, should be rapidly re-formed.

14. If the attack fails, artillery will be called upon to offer the first resistance, supported by the reserve of the various arms.

The attacker wishes to conquer, and for that purpose he must advance to-day as much as formerly, skillfully utilizing the terrain previously reconnoitered by the leaders, until at a range at which the fire can have the requisite effect. Reconnaissance and utilization of the terrain were formerly of great importance; that importance has been materially increased by smokeless powder. These duties have, moreover, been rendered more difficult, and one should resolutely face the unavoidable fact that every attack costs blood; the man should be trained to that, *should be habituated* to that idea; and it should be taken into account in adopting tactical forms for battle.

Does not military history teach that attacks on strong-

ly occupied positions, even before the introduction of the breech-loader, cost as many men as in the War of 1870? Compare Leipsic.*

Attacks by large bodies of troops over open ground may become necessary, and should therefore be practiced in peace. Even the knowledge that the attack will fail of its object should not be suffered to remove that necessity. The effect of an attack, though it be unsuccessful, may be very great.

The smaller the losses, the better will the *morale* of the troop usually be preserved. But in every case of attack in peace the soldier should be informed of the great impending losses and be psychologically (morally) trained on that point. Unless the soldier is possessed with a high degree of will-power, unless his training is such as to show him in everything and everywhere the necessity of self-control and disregard of danger, unless there is vigor and will—the will to advance—all forms will remain artifices and fail to mature results.

Not infantry alone, but artillery also has been provided with improved arms, and both arms have become more independent and capable of resistance.

Where the conformation of the ground compels the infantry to halt at medium range from the enemy and to hold out there (in first line, on open, swept ground), it will probably be practicable to carry on the action in combina-

*The Prussians lost 40 per cent at Leipsic, 38 per cent at Zorn-dorf, 40 per cent at Kunersdorf; the French 30 per cent at Borodino, 50 per cent at Aspern; the Germans 22 per cent at Mars-la-Tour, the bloodiest battle of the War of 1870-71. To be sure, the data of former days cannot be strictly authenticated. I cannot discuss that subject here. Those who wish to inform themselves are referred to the essays of Bleibtreu, von Boguslawski, and von Lettow in the *Militär Wochenblatt* of 1893, and of von Roloff in No. 69 of the *Deutsche Heereszeitung* of 1893, and in the April number of the *Preussische Jahrbücher* for 1893.

tion with strong artillery as implied in the characteristics of that arm. Should infantry believe itself capable of fighting independently in the future, it will have to pay a heavy penalty in blood. The defense has gained in strength, and will probably make more extensive use of prepared positions, and the attack and defense of the latter will be materially modified.

III. *Inquiries into the Maxims.*

It requires no argument to prove that troops lying behind cover will not, without exterior impulse from their officers, rise in order to repair from a place of comparative immunity from danger to one of great peril, and every action in which the officers were killed or placed *hors-de-combat* furnishes examples. In such cases there is usually an end to further advance, and more cannot be expected of the troops than that they hold the point they have reached. In carrying out something extraordinary, man requires extraordinary resolution and great will-power, which spring only from an absolute devotion to the cause. Devotion to ideals may in itself be able to suppress the impulses of material egotism, to enroll man in the service of higher aims, and to induce him to surrender his own existence. The soldier, like the artist, should therefore have an idealism in which he believes, and for which he is prepared to sacrifice his all. This is a *theorem*, but it does not imply that its requirements could be fulfilled in the case of every soldier. Idealism may be as different as man; whether it bear the name of faith, fidelity, love of country, political creed, whether it may seek glory and honor, greatness and elevation, its action will be the same, and that is its important point in tactics. No one will deny that the risking of one's life is something extraordinary, likewise that the

musketeer, by himself, cannot, as a rule, have the gift of devotion to the cause for which he is called upon to surrender his life; he should therefore be trained with great care, and that is the duty of his officers in peace. Should any military man decline to subscribe to this, I would like to ask him, whether that courage ever existed which is habitually spoken of in non-military and, unfortunately, also in military accounts; whether cases did not occur within his own experience where not only a heroic personal example was necessary to get the men to rise from behind the cover and to advance, but also something more which no one likes to mention—the gods know why—*i. e.*, palpable aids? The majority of men will endeavor to avoid endangering their lives as long as possible, and in battle but few will *spontaneously* overcome the temptation to seek shelter in the ditch they are crossing; these few deserve the highest praise, they are the heroes of their fatherland. The remainder ultimately obey *necessity* alone—*i. e.*, discipline and the ascendancy of their officers. It is well to keep this in mind even where the motive of the war has seized upon the great mass of the army and has impassioned them more or less. We know then how much the men are apt to yield up *spontaneously*, and how much *has to be extorted*. This extortion, requiring *for its most efficient application closed formations* which are no longer practicable on open ground, has been rendered very difficult by modern arms. For, as we shall explain later, closed formations of any kind on open ground, beginning at a distance of 1500 meters, are prohibited by the flat trajectory, the great range and penetration of small-caliber arms and by the enormously increased fire effect of the artillery. Wherever the ground admits of their use, they *should* be retained as the surest means of getting the units to the spot where we

want them; where that is impracticable, a sensible substitute should be sought for the formations no longer practicable, and here we are decidedly favored by smokeless powder. I have frequently seen the smoke of black powder so obscure the view that at a distance of 20—30 meters closed bodies of troops could be made out in ill-defined outline only. In such cases—they were the rule in the decisive stages—closed formations in no way favored the personal influence of the leaders, or but very little. *That is worthy of serious consideration.* It was about the same as though we were in a dense fog. Smokeless powder has changed this; the leaders can always see their men and the men their leaders, other circumstances which may happen not prohibiting. The control of leaders over swarms of skirmishers as compared with closed formations never was *nil* and is not now; it is simply less, and since the advent of smokeless powder, the personal example can be more easily seen, because the view is clearer. There are, moreover, two other means to strengthen the control over swarms. The first lies in a careful *moral training* of men and leaders; the second in an *increase of leaders*. The former is feasible at once; the latter requires an increase of officers and non-commissioned officers on the peace establishment. Although I do not believe that the leaders of swarms would thereby be relieved of all disadvantages, still these would be greatly diminished and the troops would preserve a certain fighting power, which with the use of closed formations would quickly disappear, since with the collapse of these formations the fighting power is also lost. It seems to me to admit of no doubt that, on open ground and with the use of modern arms, closed formations are bound to collapse, even at long and medium distances.

In view of the fact that, as a rule, man exposes himself

to danger only under compulsion, the tactical forms should be such that compulsion can be brought to bear on the unit. The column tactics, old as well as modern, were best suited to the purpose, next the close line, least of all the skirmish line; the first, moreover, admits of greater rapidity and precision of movement.

The more extended the swarms, and the more they are covered and *concealed* by folds of the ground, the more are control and compulsion restricted, and the greater is the temptation to which human weakness is exposed, and it is *right here* where a greater measure of *direct compulsion is indispensable*. It involves a tactical problem. To go back to close formation for the sake of this compulsion, perhaps by closing the men together in a mechanical way, would entail unjustifiable sacrifices for the sake of a principle without any corresponding gain. Compulsion should therefore be supplemented by training the leaders to *greater activity*, and the men to *greater attentiveness*. The task of the *subordinate* leaders becomes more difficult since they become the real supports of the fire action in all its stages, and the exercise of their *will* should be more an *intellectual* than a *mechanical* one in consequence of their training, education, practice, mutual understanding of each other, tactical judgment, and their uniformity of training. During the conflict modern tactics chiefly rest on the subordinate leaders and on the qualities of the individual; such is their nature; the *morale* should be as high as possible, so as not to melt under fire. The former should be tacticians to a greater extent than formerly, and the latter should be able always to understand the tacticians. Shrapnel fire and torpedo shells of the artillery, which spread over the field like the jets of a rose-head, make columns and close lines useless at considerable distances, small-caliber rifles pro-

hibit them altogether at medium and short ranges, and as infantry and artillery may be expected to direct their fire skillfully, and as they moreover always fight in conjunction, columns and close lines of any kind on open ground are barred from the battle-field altogether. The close line particularly is impracticable, owing to the width of target it presents and its unhandiness, and there remains the *single-rank swarm* alone, as the most unfavorable target and as the best formation for movement under these circumstances. The swarms should not be too large; 30 men in 3 groups of 10 men each would probably be the most suitable limit for their control.

But it should be kept in mind that with this fighting method troops will, as a rule, slip *rapidly* from the grasp of the higher leaders, and in *many* cases also from the hands of the subordinate leaders during *subsequent* stages of the action. It should also be remembered that it is not a question of controlling a battalion, but of employing brigades and divisions, no longer in the Napoleonic *form*, but in the Napoleonic *spirit*, as great problems—to which all struggles for decisive points belong—can only be solved with *masses*. In order that they may be controlled from above to some degree at least, their leaders should know what they are expected to do and what they want to do; they should base their measures on *thorough reconnaissance* and be held responsible for their decisions and orders. Hence the scope of their authority should be fully established and known.

It is by reconnaissance alone that the leader can form an idea of his opponent and of the measures to be taken for overcoming him. This duty should never be left to the subordinate leaders; it should pertain exclusively to the superior leaders from the brigade commander up. Preparation (deployment), and forming for attack are the exclu-

sive duties of the latter; in the execution of the combat the higher and subordinate leaders both share, but even at that stage it is chiefly the superior leaders who take the proper steps for a prompt advance of the supports in order to gain an effective firing position and, subsequently, the superiority of fire. Whatever the skill and self-activity of the subordinate leaders may be, it is impossible for them to judge from the bearing of the firing skirmish line when the proper moment for advance of the supports has arrived. No one who has had war experience will deny this, for in most cases the very first requisite, a good view of the whole, is lacking, and sufficient view and deliberation can only be expected on the part of the superior leaders; hence if the execution of the combat is not to be left to chance, a proper scope must be conceded to the superior leaders during its execution, since it is in that way alone that a proper degree of combination and uniformity of the act—*i. e.*, of the organized action of masses of skirmishers, can be secured.

It is altogether erroneous to assume that the initiative of the subordinate leaders is thereby suppressed; they are rather restrained from license, and it is only thus that the brigades are enabled to preserve the assigned direction (spaces), that army corps are enabled to reckon with fighting spaces of divisions, and armies with fighting spaces of army corps. These things are so simple that they hardly need comment. If, however, platoons, companies, and battalions are at liberty to choose their direction (space) according to the ground (cover), lateral movements and displacements are unavoidable, which, beginning below, ultimately affect the highest units and block and render impossible control on the part of the superior leaders, who bear the responsibility. It is only necessary to look at these

things from the mechanical point of view to realize that they must not be allowed to happen.

I am going further and assert that in many cases the superior leaders will best be able, besides allotting the front, to designate the principal firing station, and to make the same known before the deployment. It is in obstructed terrain alone—*i. e.*, in all cases where the fighting will be all the more intense, that they will be less able to see than the subordinate leaders in front. It is quite in keeping with the law of control to designate the firing station approximately, without thereby either suppressing or restricting the freedom of the subordinate leaders. Moreover, it stands to reason that in many cases this freedom will only be operative beyond the “approximate” firing-station, and will chiefly consist in “correcting” the approximate to the best possible firing-station. Such are the facts. From the time when this “correcting” begins, the control in front passes more and more to the subordinate leaders, but the limits of space assigned to the brigade should be observed as much as possible. Any transgression of these limits on the right or left is justified only by imperative circumstances.

With the “correcting” there coincides in point of time the increase of the number of rifles—*i. e.*, the arrival of sufficient supports at the main firing-stations to gain and preserve the superiority of fire. Probably none who has had war experience will deny that the superior leaders alone are in position to attend to these matters; hence it is their duty to provide, according to time and circumstances, for the arrival of supports (sustaining the fire). More than this is not to be required of them, until the time for the employment of the correctly posted reserves arrives.

There can be no doubt that the effect produced by the

main firing-station can be better observed from the front than by the superior leaders farther in the rear, and it is therefore quite right that the impulse for seizing the enemy's position should come from the former. But even at that point—*i. e.*, just before the decision, the relations between superior and subordinate leaders should not cease to be reciprocal.

In many cases, depending on time and space, it will be difficult to define these relations; it will hardly be possible to maintain communication between front and rear, to promptly supplement each other's decisions and measures; at this stage the decision is left to the tactical intuition of the subordinate and higher leaders. These difficulties should be fully recognized.

It follows that I am, as I always have been, opposed to the so-called "normal attack," but I am an unreserved advocate of the fundamental law of *control in action*. In former times it was very important to properly gauge the deployment as to time and place, and to promptly gain and hold a vantage-point from which to survey the ground. According to the experiences of 1870-71, the entire leading should exclusively rest in the hands of the superior leaders; it was found impracticable and we were in a tactical quandary. The "normal attack" was abolished; it was well; but the control was also surrendered. We must regain the latter.

Since the long-range, small-caliber rifles restrict us to a greater distance *before* entering into battle, the work of the leaders as regards the deployment, direction of attack, and the preparatory measures for lateral and longitudinal extension (forming for attack) is rendered much more difficult. It is therefore all the more necessary to lay down some fixed rule for the action of the leaders of the higher grades at these stages.

The superior leaders will probably be to the front early, and as far out as possible, accompanied by sufficient mounted orderlies, about 4—6 to a brigade commander. There they will pass through several "stages of doubt," continue to observe to the front and flank, and to send orders to the rear. It will therefore happen that divisions sometimes complete their "preliminary" tactical deployment far from the enemy, as has been described in the introduction in the case of armies. From that time on "corrections" of the tactical deployment will be found necessary at many points, perhaps while the advance guard is engaged, which will in turn require precision of marching on the part of closed brigades. For this purpose we must be proficient in everything required in connection therewith, and we can do neither without columns nor without lines (*Treffen*), as there is no longer such a thing as passing from the "preliminary tactical deployment" to the marching column; the units must make all the "corrections" while deployed. On this point, therefore, the Regulations should as much contain precise prescriptions as to the maximum width (and depth) of the brigade, the maximum limits of the supporting lines, and of the position of the reserves.

These constitute the maximum limits for the scope of the brigade commander's activity in forming for and carrying out the attack. If the battle-field everywhere presented the same conditions, if it showed the same character at all points, and if the action fought on it did likewise, a scheme for a normal attack would of necessity formulate itself. The great battles of the future will require a space 25—30 kilometers square for the stages of deployment of *both* opponents, for forming for attack, and for its execution; a great variety of terrain is thus of necessity encountered, and it falls within the scope—in fact, it is the duty

—of the superior leaders to make provisions comporting therewith.

In carrying out the combat the troops will certainly arrive at a stage where they will act like "hordes," but there should nevertheless, or rather on that account there should, be definite rules, because at any rate it is more difficult to fight a controlled action than to learn the theory of a "normal attack." In the place of regulations which would endanger the control, we need such as will be its safeguard. The distances of the supporting lines may vary; but the supporting bodies should be properly formed and suitably posted in rear of each other. The brigade commander alone is the man to give the orders for that. It follows that for the preservation of control the latter must be conceded some definite, and at the same time indispensable, powers; that two brigades will never be formed for the attack in the same way, or that they will carry out the attack in an identical manner; hence controlled attack and normal attack are two different things. Scherff and his adherents advocate the former, and their opponents alone construe it into a mechanical normal attack. Another proof of how readily the letter may kill the spirit.

I have repeatedly spoken of "corrections" on a large and small scale. So far, I have nowhere heard this new feature of tactics prominently mentioned, which modern arms render unavoidable. Modern arms make uncertainty greater, increased uncertainty enjoins greater caution, the latter calls for more reflection for every emergency. In modern tactics, therefore, no leader can from the beginning be in possession of so much that is definite on which to base his conception and arrangements as formerly. That basis can by no means be gained by mere observation and reconnaissance; an action will be necessary in many cases.

From this great, relative, and protracted state of uncertainty follows the necessity of constant "correction"; it goes through the entire higher and minor tactics; both are, in fact, nothing but "corrections from case to case," based, however, on the spaces provided for the deployment of the brigade in the pitched battle. It will be conceded that such "corrections" have a special object; that they should be made accordingly; that control is requisite, which should rest in the hands of the brigade commander without prejudice to the freedom of the subordinate leaders in the front line. The function of "tactical corrector" is his to a much higher degree than could formerly be the case, and no one can solve the problem better and more quickly by suitable subdivision of his brigade, by pushing forward subdivisions according to the tactical necessities. For these reasons I consider the brigade commanders the leading pillars in the pitched battle, and they should attach the greatest importance to a subdivision suited to the circumstances in each case. Fighting in a formation of great depth is to-day the universal task of leaders; it is maintained in its legitimate place by this continuous "correction," as "corrections" can best be ordered and made from the rear. While a normal system would be wrecked by the many varieties of the battle-ground, the difficulties of terrain which impede control should not be underestimated. Under fire any cover exercises a powerful attraction, as is well known, and though it may be possible to resist it, yet the tactician should look upon all cover also in its capacity as an obstacle to the forward movement and as a hindrance in the controlled attack. With respect to the attraction of cover, I call to mind the ravine of Mars-la-Tour, and the bank and hedge, and above all, St. Hubert, where a whole division was crowded together. As regards obstacles to movement, I call

to mind the wire fences at Mars-la-Tour, the hop-fields at Wörth, the gardenlike character of the country around Orleans and Le Mans, with its innumerable scattered farmsteads, houses, and villages, the various hedge and wall-fences, the guttered vineyards, etc. To look upon unbroken skirmish lines as constant features of the controlled system would be to mistake the latter's object and nature. Should the ground consist of short undulations, as at Wörth and Beaune, it is unavoidable that the skirmish action should make unequal progress within the same brigade; that it will stand still at one point perhaps, and recede temporarily at another, though the attacker have the advantage at other points. None of these considerations should be allowed to invalidate the idea of control or be considered a sound objection. Without the initiative of the subordinate leaders the controlled system is inapplicable. Both belong together; they are but different forms of the same act. It is the subordinate leaders that should make up for the lack of personal observation on the part of their superiors; that should constantly look to the tactical coherence in the controlled system; that should maintain the action, or revive it when at a standstill, because the occasions are rare when such steps can be promptly ordered by the superior leaders. In that connection the War of 1870-71 offers several typical examples, not only within the limits of the brigade, but within the limits of larger bodies, made up in some instances of two or more army corps, whatever may have been the deficiencies in the details of execution. Here belong, for instance, the systematic tactics of the XI. Corps at Wörth, and its coöperation with the V. Corps, more particularly the capture of Fröschweiler by troops of four army corps encircling the hostile center. Here belongs the coöperation of brigades of two army corps at St. Marie-

aux-Chênes, at St. Privat, and at Loigny. In the first case both flanks were turned in connection with a frontal assault ; in the last two cases the flank attack of controlled brigades, as at Wörth, gives the impulse for the frontal assault and becomes the controlled, and combined action of several army corps. The battle of the VIII., VII., and II. Corps, at the Mance ravine constitutes a grand example of the reverse, and at the capture of St. Quentin the commanding general failed to obtain the control he wanted. Here, as at the Mance ravine, it was found impossible to retain the desired degree of control over the battle act, because the control of the tactical act was lacking. Control of the battle act imperatively requires control of the attack of brigades, and control is therefore equally indispensable from the point of view of the conduct of the battle. Still the circumstances at the Mance ravine should not be exclusively judged by the tactical features. The example shows that the greatest possible *accumulation* of troops within a fighting space for not more than a division neither constitutes a controlled system nor is it calculated to promote control, because such concentration no longer permits of extension for battle; but if we imagine the commanders of the 15th and 13th Divisions and several brigade commanders replaced by men like Treskow, Wittich, and Kottwitz, things would have taken a different course at the Mance ravine. There three evils combined: lack of control in the attack, incapacity of many superior leaders, and lack of control of the battle act.

The companies and battalions forming the firing lines are no longer to be considered as under the control of the superior leaders; *all these swarms are more or less lost to them; they fight simply straight to the front!* It follows that the superior leaders should understand from the first how

much they can spare for the fire-action, and how much they must keep back in order to be able to emphasize the fire-action at the decisive moment for bringing about the decision, or to meet checks. Hence brigades can no longer use "*Treffen*" in the traditional sense, but only lines naturally differing in number, strength, distances, and forms according to circumstances.

Dissolution is not beset by the dangers with which its opponents would surround it. For, 1, the enemy is, as a rule, no better off, except in prepared positions; 2, infantry and artillery always fight in combination; 3, fire is very effective at 600 meters. As regards the decision, *it will in many cases not be found impossible in the latter phases of the battle to bring up small closed bodies even over open ground, because the enemy's fighting power diminishes from hour to hour.* At such moments, a comparatively small closed body may gain a decision (La Tuil rie), which could not have been gained by mere fire. It follows, in turn, that the superior leaders should *from the first* employ the fire-action of infantry and artillery with the greatest energy in order to gain the superiority of fire. That once gained, the decision will *in future differ but little from that of the past*, and reserves must be kept in hand for the purpose. Nor should frontal attacks supported by turning movements be shunned; they should not be undertaken, however, until the superiority of fire has been gained.

To-day the distance between the last firing-station and the point of attack is bound to be much greater, as a rule, than formerly, and will hardly ever be less than 300 meters. It constitutes a grave disadvantage in the final rush. There have been rushes of 200—240 meters without stop, but the consequent exhaustion is detrimental. More difficult than the accomplishment of that physical task is the

recognition of the right moment for the employment of the reserves, which constitutes the most difficult problem confronting the brigade commander. Unless the reserve has moved forward in accordance with the state of the action, it is apt to be too late for the assault and will be of no benefit. Again, it will be doubtful in many cases whether the reserve can follow without losing its fighting power.

In analyzing the attack of the 38th Brigade I have shown that a field of attack as at Mars-la-Tour is rare and exceptional; that notwithstanding the then (defective) tactical forms (chiefly company columns with a front of 30 meters), controlled leading of the brigade would have been practicable as far as Contour 780; that notwithstanding the then tactical forms, and without losing all fighting power, the brigade *approached* the *sheltered* enemy to within 150 meters and closer, and even intermingled with him, he being ultimately completely concealed by the increasing density of the smoke, which clung heavily to the ground; and that the brigade would not have been defeated had other brigades been available in support as at St. Privat. A general tactical inquiry should not be restricted to the action of a single brigade, to be sure, but should cover a number of events taking place on a front of 12—15 kilometers and more. Since battle-fields of such extent can hardly be assumed to be devoid of cover, it may be taken for granted that up to 600 meters from the enemy the majority of the infantry will find more shelter from his fire than at Mars-la-Tour and St. Privat. How a brigade should cross that space no one can determine in advance for every case and for every kind of troops, since the deciding circumstances—i. e., opponent, armament, enemy's tactics, and terrain—will differ in each case; the solution must

be left to the discretion of the brigade commanders in connection with the initiative of the subordinate leaders.

These reflections, though based on psychology, facts, and experience, are not meant to establish a universal law to be followed under all circumstances; they merely constitute considerations whose application is the business of the tactician. In unwise hands, and without the impelling force of the will, the best tactical doctrines remain a thing without life that had better be left in a pigeon-hole. Where they *may* or *should* be applied or deviated from can be determined solely by the individuality of the leaders, by their military talent (ability), but the fundamental principle of all tactics—i. e., aiming at the ascendancy over the individual bodies with a view to their control, remains sound whether long-range and mass fire or not, and the prescriptions of any regulations should rest on that basis. It will not always be found practicable, but an endeavor should be made to regain control if lost, since those troops alone will conquer which can be led. Modern fire-action thus makes very high demands on the *efficiency of the individual soldier* and on the *leaders* of many men, and the majority of them will be found wanting as in all unusual things.

The fact that, according to the official reports, the second line of the Congressionals at Placilla in 1891 followed in close formation at a distance of 500 meters furnishes food for reflection.*

As regards the movement, halts during the advance should be avoided as much as possible, as they may be considered nails in the coffin of healthy tactics. Up to this day the French infantry constantly practice movements

*For details see "The Decisive Conflicts in the Civil War in Chili, 1892" Vienna, Reichswehr, 1892, and Hugo Kunz, "The Civil War in Chili," Leipsic, 1892, F. A. Brockhaus.

in double time, and Cissey's division at Mars-la-Tour was enabled to take a timely part against the 38th Brigade, simply because it alternately marched and ran. The soldier, as a rule, carries his pack, which makes movements in double time very difficult and fatiguing; moreover, even a regulated double time will bring on unsteadiness and exhaustion of physical strength. For that reason I am opposed to the suggested use of double time in the case of small, handy bodies in all zones of fire. On the other hand, all troops must to-day be able to move more smartly than ever; precipitation, as at Mars-la-Tour, in taking a rapid gait, more running than walking, which uses up lungs and muscles, and which brings the troops in front of the enemy in an exhausted condition, should be avoided.

After the War of 1864, General von Moltke published a book, "Notes on the Effect of Improved Fire-arms on Tactics," in which he says, among other things: "It may be assumed that at a distance of a quarter of a mile (not quite 1900 meters) a close column will not be able to *hold out* under the fire of a rifled battery. The opponent is forced to deploy, and finds his only protection in the *dispersed order and in motion*."

In the same place we read about the fire of the breech-loader: "Under ordinary circumstances, and in the pitched battle, the decision will be gained not by fine marksmanship, but by *mass fire* at those ranges where *the unavoidable errors in estimating the range are neutralized*."

Who in 1865 would have thought of the perfection of the fire-arms of infantry and artillery which has been reached to-day, by all armies of the European powers? In the case of the infantry the improvement had so far progressed by 1870 that, under circumstances as at Mars-la-Tour and St. Privat, the mass fire of the infantry produced

a sensible material and great moral effect at *almost the same ranges as artillery fire*, and that will be still more so in future. It was bound to have a further effect on "formation" and "movement"; but the "dispersed order" should not be permitted to degenerate into a condition making leading impossible, nor should "movement" become a "chase," or "seeking of cover" a theory that paralyzes the will, the initiative, the application of compulsion, makes personal example impossible, and delivers tactics over to license. The modern fire-arms of infantry are more constructed for a flat trajectory than for fine marksmanship—*i. e.*, the greatest possible extension of the swept zone was sought and attained, and the fire is effective not only at short, but also at long-ranges. The soundness of the words of Count Moltke has thus increased with time; another bright mind (Captain May, who was killed at Amiens), who asserted in 1869 that with rifles with flat trajectory mere horizontal aim would ensure effective fire, became the object of derision and hostility.* His tactical suggestions, which have since been adopted in practice, were in part based on that theory.

Where the defender has the choice of position, he will select one with a wide field of fire; he will not always be able to do so, because interfered with by the enemy. At Vionville—Mars-la-Tour we have seen that the defender was able to do so although he was surprised; hence tactics should invariably reckon on the long-range fire, and the attacker should seek to minimize its effect by adroit advance and by rapidity of movement, while the infantry, thrown to the

*The idea of the horizontal aim did not originate with Captain May. As early as the wars of the Revolution the French generals converted the same into practice, because they had learned that in the excitement of battle the horizontal aim is one of the few things the soldier may be relied on to observe in firing.

front for fire-action and gradually reinforced, will, in combination with the artillery, keep the enemy busy, shake and demolish him. I consider the advance by rushes practicable only when the leaders are many, the units small, and the distances short; I do not believe that more than three rushes could be gotten out of troops in the absence of these prerequisites. How far do we get in rushing and where does the outer limit for the beginning of rushes lie? I do not believe that a large unit can advance by rushes without injury to their control; I do not believe in the practicability of fire and movement as exemplified in the "rush tactics"; I do not believe in it at all, owing to the amount of freedom, akin to license, which the Regulations concede to the subordinate leaders in the "choice of the ground." I consider these tactics an office production. I would rather have the entire infantry creep on all fours in single rank lines; it would at any rate be approaching the enemy. Within the brigade, full authority should be given for the use of all means that will make it possible to reach effective distances. Dissimilitude and ridiculousness should not be permitted to constitute a bar. How many things matured by the battle-field would be ridiculous if they were not so serious! It should not be concluded that the infantry should be drilled always to approach to within 600 meters, indiscriminately; that would be a pernicious scheme. It should rather observe the rule of remaining as long as possible in motion without stop. The force of that rule dates only from the adoption of the open single-rank line. In fact, it will be the losses that fix the time for making a halt and for advancing subsequently by rushing or creeping. I believe, above all, that the "attack by rushes" robs the spirit of the attack of much of its determination and dash. This subtilizing with the terrain is bound to make pedants,

is bound to impair vigor; and those who deny that an attack movement can be carried to effective range without stop are thinking more of the drill-ground than of the battle-field. On the latter we moreover stand in need of every moral lever; an attack on a large scale is something tremendously inspiring, it carries everything with it; rush tactics are wholly without such influences. They have not even been tried. Of the former we know at least what may be expected from it. The Congressionals are said to have advanced by rushes in the battle of Placilla, but I cannot believe it. That procedure would require a state of efficiency such as troops which for the most part had but 2—3 weeks' training could not possess. The statement is moreover controverted by the arrangements for the attack, under which the reserves were to follow in close formation at a distance of 500 meters, and the first line to reserve its fire until within 400 meters (Placilla). We have there the same tactical features that are to be observed with militia troops. The victory of the Congressionals was due to superior leading, to superior armament, and to the enemy. There can be no doubt, however, that the fire was opened at such a late stage because the experiences at Concon had shown its necessity in order to prevent the recurrence of a deficiency in ammunition. Those objects were not accomplished, however.* In general, both parties expended 150—200 rounds per man in 2—3 hours. The reports show that the superior arm gave superior results. According to these reports, the Balmacedists lost 20 per cent at Concon and 30 per cent at Placilla, the Congressionals 10 per cent and 16 per cent respectively. The tactics of the side which possessed the superior armament were on the whole as follows: Ad-

*See the reports of Tel Canto and Körner in the writings above cited.

vance of the skirmishers without stop and without fire to within 4—300 meters; opening fire at that range; reserves follow at 500 meters. No conclusive deductions should be made therefrom, because Balmaceda's army was a very poor one.

As regards the opening of fire on the part of the assailant, I am unable to change my opinion on account of the small-caliber rifle. The danger of running out of ammunition is much diminished by the fact that every man now carries 150 rounds instead of 100, as he did up to 1890. That, however, does not free us from the danger of a consumption of all our ammunition which is invited by the magazine rifles. Although a late opening of fire does not protect troops from the danger of firing away all their ammunition, still it constitutes an additional means for diminishing that danger. I advocate a late opening of fire on the further ground that an early opening of fire is the greatest enemy of a vigorous advance. I am not, of course, referring to the cases where volleys are practicable. Unless they promise unusually fine results, it is better to do without them, to seek to approach under cover, to save ammunition, and to engage in fire action at a range where the ballistic qualities of the rifle promise corresponding tactical results, which, as a rule, is at 600 meters. Cases where fire at longer ranges may be of some value will probably not be exceptional, but in general the attacker will have to advance to about 600 meters, as at and within that distance infantry will best be able to quickly gain the superiority of fire. The advocates of long-range fire suggest the opening of the fire action at 1200 meters with increasing intensity; it may be useful under certain circumstances, but to accept it as a rule would be to greatly handicap the offensive power of infantry and to diminish and even endanger its

entire fighting power with respect to later stages; *the advocates of long-range fire (more than 1000 meters) are usually men who do not think highly of the effect of artillery, and who, although not saying so in so many words, are inwardly convinced that the infantry can do the business alone. They are infantry-tacticians, not tacticians, as the latter always reckon with the three arms.*

If we would make it an invariable rule to open fire at 600 meters, we would be foregoing the benefit of many moral and material advantages of the arm. It would be quite absurd to use a rifle of great efficiency at 1000 meters in the same way as one which possesses the same qualities only up to 400 meters.

In our army there is, unfortunately, an excessive reliance on *infantry by itself*. In battle the latter is no longer the principal arm in all stages up to the decision; without artillery it will frequently be unable to advance or to hold its ground; it is therefore dependent on the artillery, and the latter in turn on the infantry. The artillery has made gigantic progress by the improvements in the gun, in the projectile, in training, etc. In consequence of smokeless powder and increased effect of fire the artillery has become more independent and capable of resistance, and can now carry on the action until just before the decision without interfering with its own infantry, while in 1870-71 the troops were much endangered by the artillery when firing over them. The view remaining unobstructed, artillery can always see, always aim, always observe, and make better practice. For the same reason such direction of fire as meets higher demands has become practicable and the fire may now be *concentrated on the decisive points*, which was impossible heretofore. Nor should the tests and experiments be considered as concluded in this respect. For all

these reasons the fire action at great distances should, as a rule, be left to the artillery. There will be exceptions, of course, and infantry had better abandon the idea of initiating, carrying out, and deciding the battle. It has cost us bitter lessons and many lives, and has brought us little or no result against the breech-loader. In looking over all the important actions against the Imperial French Army in 1870, we find Sedan the only instance where the artillery is employed in a manner in keeping with modern tactics; there its fire destroyed the enemy, and the infantry relying on its effect could be held back.

At Wörth, Vionville, and Gravelotte our infantry was, as a rule, employed too soon and the artillery too late; but even then (III. Corps at Vionville, Guard at St. Privat, VII. and VIII. Corps at Gravelotte), the artillery, whenever it acted in large bodies, *took charge of the fire action at long range*. In view of the unfavorable conditions at Vionville and St. Privat, its action was moreover of great general significance tactically and of incalculable effect on the situation of the infantry of the III. and Guard Corps. Infantry should, as a rule, leave long-range fire to the artillery.

If artillery delays its fire until the main body of the infantry is thrown into the action, it cannot sufficiently shake the enemy by the time when delay means destruction to the infantry, and when the latter must seek to hasten the decision as much as possible. This law is of greater force to-day than formerly, because, according to human calculation, the increased fire effect may under certain circumstances perhaps bring about the decision even before that moment. No body of troops will to-day be able to stand a well-directed combined infantry and artillery fire as long as was possible in the past. Hence the artillery

should be developed as early and in as great strength as possible. If it succeeds in getting in position without drawing fire and in anticipating the enemy in getting the range, one principal portion of the work is done. All its efforts should be bent to that end. To be sure, artillery should be protected to-day from the first by infantry thrown some 500—600 meters to the front; otherwise it might be prevented by the enemy's infantry fire from coming into action at all.

How in each case the leading of the lines in rear is to be regulated depends on the situation, and in that connection the use of precise points of direction and the observance of the allotted space are indispensable. If the ground is open, the distances between the lines should be increased; if the ground is more covered, the distances may be diminished, depending on the amount of cover. On open ground there will be no choice but to use single-rank, opened, lines with great distances. Since the higher ballistic qualities of the rifle confer on the skirmish lines increased powers of resistance, there will be no risk in increasing the distances. But exercises of large units in close formation in the terrain should not, on that account, be dispensed with, and in traversing woods particular stress should be laid on tactical cohesion. Woods play a great rôle in battle; I will merely mention that of Maslowed and the Bois des Génivaux; their use for covering the approach in the manner of the 27th Brigade at Probus will probably be frequent in the future, when opportunities will be afforded to take advantage of close formations and to cover the enemy at a comparatively short range with a crushing fire. The very thing the 27th Brigade did at Probus for masking its approach will, under similar circumstances, be practicable in the future, notwithstanding the small-caliber arms.

The disruption of units should also be avoided as much as possible. The intermingling of troops within a certain space, however, which is inseparable from the combat of masses of skirmishers, should not be confounded with divergence of troops in different directions and transgression beyond the allotted battle-space, whereby fractions of different units become intermingled without having a common object. That lies chiefly within the power of division and brigade commanders; a sufficient reserve must be provided at all events. For those who have observed the condition of troops that have been unfortunate in battle will admit that in the hands of men physically exhausted and morally spent the best rifles are no better than none. In 1870 battalions, regiments, brigades, divisions, and even army corps, were mixed in wild confusion; at the first shot everybody rushed to the front as though it were a signal that thereafter no orders need be *given* or *obeyed*. For hours battalion, regimental, and brigade commander did not have a man in hand; the soldier was fighting the battle, in fact. Divisional generals did not have even companies at their disposal—not even in defeat—because their brigades had crumbled to pieces at the most heterogeneous points. Corps commanders had two or three little reduced battalions under them, while in the front the fate of the battle was hanging in the balance for hours. With such tactics we need only lieutenants and soldiers, but they will accomplish no great result; the latter will invariably require superior, well-planned leading, the employment and control of masses for a definite object, and, within these limits, control on the part of the infantry brigade commanders.

In capturing the enemy's position, its increased distance from the last firing-station will form a distinctive feature as compared with former conditions. Any one, however,

who has visited the battle-grounds of Kissingen and Würth will come to the conclusion that in the struggle for the key of a position the same phenomena which appeared here will frequently recur in the future—i. e., that it will be possible to approach within 80—100 meters. The capture of Fröschweiler is typical for the advance of the reserve (Starkloff's Würtemberg Brigade), for the impulse to the final rush, for the intermingling of troops of four different army corps in the captured village, and also on account of the rapidity with which they re-formed. This example absolutely illustrates all the lessons and is a good reference for any successful attack. It is approximated among the important actions, by the attacks on St. Privat (north), Loigny, and St. Quentin; but in future the final assault will probably be directed more against artificial keys than against villages. This does not modify the principles of execution in any way.

In the case of an unsuccessful attack the defeated troops will hardly find immediate support from infantry in their rear; the support will come exclusively from the artillery. On that account I am opposed to having the artillery accompany the attacking infantry. Changes of positions, being easily visible, should be avoided as much as possible; excepting moral grounds, there is no reason why artillery should accompany the attack, for the use of smokeless powder makes it profitable for artillery to remain in one effective firing position, and the improvement of the principal projectile (shrapnel) admits of great effect at distances which render it wholly unnecessary to accompany the attack. Yet it may be useful in some cases. But the rapid occupation of a captured position by artillery is impracticable *per se* on many grounds.

At the moment of the defeat of an infantry attack cav-

alry will find opportunities for gaining brilliant success, especially if it suddenly advances from concealment (St. Quentin). Various incidents at Vionville teach the same lesson. Cavalry should therefore seek favorable positions for such emergencies. Placilla shows that a successful infantry attack enhances success to an unbounded degree. There is much to be learned from that example.

IV. Of the Moral Training of Troops.

It is not always easy to recognize the tactically ripe moment. The enemy may deceive us in that respect, as he did at Vionville and Gravelotte; and, moreover, one may be mistaken on one's own part for other reasons. In that case the troops must hold their ground, for every conquered bit of earth must be held on general principles; here it is where the moral strength of troops shows itself. At St. Privat the Guards held out for three hours under a destructive fire, though, to be sure, they were not called upon to meet a counter-attack; the 38th Brigade held out 30 minutes within 80—150 meters of the enemy without the support of other infantry or of sufficient artillery. I state this in reply to the assertion that "no body of troops will remain halted under sweeping* fire; that it will crowd either forward or to the rear." That is a pernicious doctrine, particularly to-day, when the continuous danger space extends 600 meters from the muzzle. It thus becomes incumbent on infantry to hold out; otherwise an action could not be fought within the continuous danger space. I doubt that a superiority of fire, sufficient for a decision, can be gained at a greater range than 600 meters.

*The author uses the term "*rasant*," meaning that no part of the trajectory exceeds the height of a man. We have no corresponding technical term. In the absence of anything better, the term "sweeping" has been pressed into service.—*Translator*.

Losses will have to be put up with, and the resolution to bear them should be ingrained in the troops by peace-training, for that moral force is the most precious gift the soldier and subordinate leader can possess. To develop it is the work of the psychological education of troops in peace; we should take care not to mistake exterior matters, such as a smart manual, firm step, loud answers, etc., for the spirit, or to judge the moral efficiency of a regiment by its display of these things. The moral efficiency of troops is not so much the result of practical exercises as of intelligently and judiciously conducted instruction.

At the time the 38th Brigade employed in part the most dangerous tactical forms; yet it advanced without stop until intermingling with the enemy. What does that teach? That the moral (psychical) education of the troops should be looked to above all, because it outweighs everything else, and it is the point to which I constantly recur.

The last few wars do not show a single instance of a devoted and deadly attack that can at all be compared with that of the 38th Brigade.

Kottwitz's brigade at Loigny and Skobelev's attack in the third battle of Plevna approximate, but are not equal to this instance, because in either case the circumstances were more favorable to the assailant.

The feat of arms culminated in a horrible disaster, but it is instructive as showing what stout-hearted regiments can do.

And passing to the material side: if losses constituted the greatest glory, the 38th Brigade would be entitled to it. Of all the German troops it suffered the greatest losses in the shortest time as compared with other units. The occurrence is therefore equally singular and notable both from the psychical (moral) and tactical points of view.

It is more difficult to control many small detachments than few large ones; it is more difficult yet to control brigades fighting entirely as skirmishers, which will be the rule. This undeniable disadvantage of the superior leaders should be nullified as much as possible by the tactical training of the leaders and the moral training of the troops.

Conceding the control on the part of the higher leaders within the zone of destructive fire to be perforce restricted, how can that deficiency be compensated for? I have mentioned in this connection: 1, careful training of the soldier in skirmishing and in firing; 2, development of the feeling of self-reliance based on the confidence in the arm and on the training of the skirmisher; 3, higher tactical efficiency of the subordinate leaders of all grades; 4, increase of the number of the lower leaders; 5, clear and precise orders regarding the object to all officers down to the captains *before* entering the action, and the endeavor to prevent misunderstanding during the action. All these requirements are of purely mechanical character or address themselves to the intellect alone, and remain without effect if both fail. It should therefore be endeavored to prevent that failure; the means thereto are purely moral. It is hardly necessary to refer here to the officers, as they are all more or less imbued with an idealism for the sake of which they are prepared to surrender their all. That is not sufficient, however; it should be endeavored to develop some degree of idealism among the great mass of the combatants. In the case of more highly developed men and strong characters (officers) this may spring from very different grounds, but in the case of the soldier it should be based on the *most natural* grounds. They are faith, national sentiment, love of country, esprit. The entire training of the soldier should be *systematically* built up on the basis of these four qualities,

so that he may learn to distinguish between virtue and weakness. It is by no means easy, because the development of culture, intellect, and moral sense of the men differ very much in degree, and it requires no small amount of time, patience, and devotion on the part of the officers. The choice of the means will therefore very much depend on the character of the troops, and they should be so chosen as to enlarge the soldier's conception by instruction, to rouse and increase his susceptibility for the sublime; in a word, the man should be subjected to moral training, keeping the enlargement of his intellect in view at the same time. The best means to insure progress in each one of the four qualities consists, in the first place, in rousing the men's interest, inclination, zeal, and love for the profession; in making intelligible to them the sublimity of the duties to which they are called; in strengthening their hearts by numerous examples of how the heroes of the Fatherland, *whether carrying the marshal's baton or the musket*, have conceived these duties and have surrendered their lives for them. That can always be done, opportunity for it is never lacking in military life, and even in practical exercises this or that example may be interwoven and enlarged upon. The chief work will, however, have to be accomplished by instruction by such officers alone as can speak in a comprehensible and stirring manner on such topics. What may in this way be gained by the right kind of officers may easily be undone by less able officers, because a man's *feelings* are very sensitive and should be touched only by a careful and gentle hand. While the powers of the intellect and feeling are thus being roused, kind treatment, such as will make the man aware *that he is profiting by it*, should be used to rouse his ambition, because we need that for everything and always, and because the entire training must rest on the

sense of honor; in it the soldier's aims and life should culminate, and he should be unable to separate his own honor from that of his corps, of the army, and of the country. It is always the sense of pride and shame which in the case of the soldier—because with him everything takes place publicly—are of such great moral effect on the whole character of the army and its behavior in battle, and not a day should be allowed to pass by without the officers thinking over it and acting accordingly. It is true, part of the men to-day are indolent in Frederick's sense, but the remainder are easily susceptible to a higher and nobler conception of the duties of their profession. That fact should be judiciously and strenuously taken advantage of, and hours of instruction are worth more than days of spirit-killing drill, although I would not have one iota abated from the customary rigor and precision. Although a taste for the sublime and heroic is far from making heroes, still, once roused and refined, it furnishes us with a means to act on the pride and shame of the men and to quicken their sense of honor, their will-power, and their sense of responsibility toward God and man, toward their king, their fellow-citizens, their families, and toward their own worldly goods. There are plenty of means available for this end, but I omit them because it is not within the scope of this work to enumerate and discuss them.

If the soldier can be made susceptible to honor, pride, and shame, courage may also, to a certain degree, be trained into him; history shows instances where injury to their honor has driven men not in themselves courageous to heroic resolves, to great vigor of action, and to a remarkable degree of devotion! But we find them invariably men of but one faith, however singular that faith may have been; hence I am convinced that a careful moral training of any

troops will be felt on the battle-field, and that troops susceptible to noble impulses will alone come up to the requirements made on the men by the modern fire-fight. This being the only means, all *education* and *training* should be based on it; and having learned, by a close scrutiny of my own nature, that soldierly courage admits of cultivation, I fail to see why the same should not be possible with the better class of the men.

The results accomplished will not be *uniform*; a portion of the men will give no proof whatever of their peace-training on the battle-field. They are a class of beasts; with others will and weakness will contend against each other, the struggle ending in favor of the latter; the third (smallest) part will stand the test. They are the product of inherited qualities and subsequent training in the school, in the home, and in society; they are the heart of the troops, and with them and with the efforts of the officers it will be possible to make the second class stand to their guns. We are duly appreciating the evil effects produced on human nature by the skirmish fight, but it would be wrong to reject that method of fighting on account of their existence. It is only necessary that every one should be cognizant of the weaknesses and dark sides of his profession, the officer of those of his tactics, in order to counteract them intelligently. They will never be completely eradicated from tactics, as that would mean to eradicate human nature. Stout hearts are moreover found everywhere; Nature does not pick out a special class of men for that, and the leaders should honor them suitably where they come to the fore; it will invigorate the military spirit and stimulate all well-disposed characters.

Every battle-field requires special measures! Obstacles of all kinds exert their effect and cause delay, displace-

ments, and irregularities. It is the aim of the tactical training of the leaders to overcome them and to keep in the midst of decisive and unexpected conditions an open eye on the roads which lead to tactical superiority; here is where the difference between mechanical action and the true conception of the situation, *the value of personal characteristics*, which will ever be of first importance, will become manifest.

We may select any innovation and any field touched by the same; in their application man easily overshoots the mark, and in doing so inflict on himself more or less painful wounds. Thought anticipates fact (speculative theory), and experience alone can demonstrate what the merits of the innovation really are. True, war alone offers the full measure of that experience, but much can be done in peace in the way of preparation, if the innovations are followed intelligently and without bias for principles. On no field is the punishment of false speculation so fatal as on that of tactics, and nowhere should we be more careful than there.

When one of the large armies had adopted long-range fire-arms, other competing armies could not afford to remain behind, and had to enter on the path of progress. If not on others, it was necessary on moral grounds, as they are all important in battle. It should be kept in mind, however, that the *man* who shoots is more important than the *shot*, and that so far as *natural egotism* and the *no less intelligible indolence* are concerned, man remains the same despite superior education and a higher moral level. Hence those troops alone will *conquer which are led*. It is certain that under many circumstances leading will require greater sacrifices than formerly; who falls, dies for his country, for his profession, and also for his—in this instance, noble—egotism.

In war the most sublime is to be looked for in the soul.

On it the fighting principles should be based and the guiding ideas for training and leading be built up; with the help of experience, the right views will then be taken. The attacker reaches all too early the point where every rule is shattered and supplanted by irregularity, and in the chaos which is unavoidable before, at, and after the decision, man should stand above disorder and confusion, still capable of exerting his will-power, guided by the intellect, to bend so many unchained forces under his sway; to bring them forward again under control is the second part of this difficult problem. If such men command in battle, our banners will continue to wave over captured heights. There should be constant endeavor to reduce the many accidents of battle which can not be wholly eliminated. To transfer the battle to the night, in order to escape the moral and material effects is to formally invite these accidents, and no wise man will concur in that proposition.

I have frequently sought for the reason of our "philosophy of losses." Is the same justified because we no longer look at things in the right way, or have we become weaklings as compared with our progenitors, or does the superior material of men constituting modern armies cause that wail to go up after every battle, or is it the moral effect of the breech-loader that has set so many springs in operation?

Many theories might be advanced on this point; I refrain from advancing any, because we are already laboring under a plethora of them. It is certain, however, that a particular degree of civilization also engenders effeminacy, and strengthens that egotism which culminates in personal comfort or craves high living, thus sapping virile strength and self-sacrifice; also that the stupefying fire of the breech-loader produces an overpowering *moral* impression on by

far the great majority. We see, therefore, that tactically the greater portion of warfare falls as much within the sphere of the will as has always been the case strategically.

To those who would charge me with lapsing from justified psychological requirements into psychological reveries, I make this brief reply: "Consider that all we have—all we enjoy—has been gained by long periods of suffering on the part of our forefathers. They have given us all. They ask as much of us. They gave us the body, protected it, and formed and united our soul. They ask our body and soul for themselves. However freely we may spread our pinions as individuals, we remain accountable to these *creditors* for the use of our powers, even if such accountability make legitimate demands for both body and soul." A military system that does not constitute a training school in virtue, fails in its duty to the state; and the uninterrupted cultivation of all the ethical qualities of the men will ultimately inure to the benefit of tactics on the battle-field. The great mass is not converted; that is not necessary. But we shall convert some, and that suffices for our purpose and is worth the labor.

PART III.

TACTICAL DEDUCTIONS.

I. Remarks on Tactical Tendencies.

Had the ballistic qualities of the chassépôt been generally known in our army before 1870, the Germans would not have entered upon the war with any doubt as to what was in store for them. The authorities dealing with such matters might have readily ascertained the ballistic qualities of that rifle, since it had been in their possession, together with the requisite ammunition, since 1868. Instead of spreading correct notions of that rifle, the error was committed of concealing from the students of the firing school and from the army at large the great superiority of the Chassépôt over the needle-gun in ballistic qualities.* Hence it is not the troops and the officers on practical service that are to be charged, in the first place, with the great losses, which might have easily been avoided, and which frequently failed of any good result whatever. Still the troops had learned a good deal of the truth by other means; but as nothing was done to conform their training and tactics to that truth, the infantry was in a very unfavorable position in 1870, which was aggravated by the fact that the correct ideas advocated in the "Tactical Retrospects" (open lines, horizontal aim) were promptly smothered by the (alleged) "official" reply of Bronsart and others. Armed with an inferior rifle and aware that the customary tactics were inapplicable against the Chassépôt, the troops at the sudden outbreak of the war were suspended between heaven and earth, as it were, and it was only after the sanguin-

*See page 3-5, "Wintertagswirklichkeit" ("Winter-day Facts"), Berlin, R. Felix, military publisher.

ary experiences of the August battles that the infantry began to touch that tactical ground which might have been easily found before the war had the ballistic qualities of the Chassepôt been made sufficiently known. This, too, although two years had elapsed since the "miracles" wrought by the French rifle at Mentana! We can hardly speak in truth of superior tactics on the part of the German infantry in the August battles; the Germans conquered above all through superior strategy of such preponderant weight that victory fell to the German leaders notwithstanding their antiquated tactics. This proves incidentally how much superior strategy assists in the successful issue of a war.

Meanwhile a new leaf has been turned over in Germany, and it may be stated that the supreme authorities and military writers have done everything to spread true and correct ideas of the effect of modern arms, insufficiently perhaps, among the infantry and cavalry as regards knowledge of the effect of artillery fire. It now remains with the troops to digest what has been presented to them by these sources.

Wherever we may turn in the annals of war, ignorance and arrogance have invariably been the chief causes of defeat, and it is a singular fact that these two are always found in combination in every nation. In that particular, they are as alike as two peas. It is not sufficient to spread knowledge; it is necessary to draw from the results of experiments practical and tactical deductions for the regulations and fighting rules which are so very variable; for the quantities determined in scientific ways offer in time of peace important supports for a sound development of everything that has reference to the mutable side of tactics. The true corrigent, however, of theoretical researches and practi-

cal experiments is the experience of the battle-field. It should ever be consulted, in order to guard against mistakes.

Ever since Moltke came out with his book,* the tactical controversy has never rested; through May's "Tactical Retrospects" the questions at issue gained ground in all great armies, but it is well known that tactical innovations require a long time to prevail. In Germany more than two decades passed after the publication of Moltke's book before new regulations for infantry tactics were issued, notwithstanding the fact that the war of 1870-71 had exposed the unwholesomeness of the then tactics, and that the re-armament with the Mauser rifle began immediately after the war!

Was not that an inconsistency?

In 1870-71 the German infantry knew no normal attack; it had abandoned the then line (*Treffen*) tactics, but failed to further develop the company column tactics in the sense of the skirmishing of masses; at the outbreak of the war it had no system of attack of any kind and one was formulated during the war, insufficient, of course, as it was bound to be, and not a normal system in the true sense. Hence the shortcomings observable in nearly all attacks on a large scale should not be charged to training in a normal attack. On the contrary, it may be assumed that had the infantry been in possession of, and skilled in, a normal system, it would have fought to much better advantage. The reason why the attack tactics were such a failure lies in the fact that the infantry did not know how to fight (attack) in masses; it did not know, because it had not been trained during peace in a suitable system, and because the actual system was restricted within the limits of detachment tactics. Still we have three great attacks during which

*"Notes on the Effect of the Improved Fire-arms on Tactics."

the control, however antiquated its methods, was maintained to a high degree. The first, at *Mars-la-Tour*, has been explained; the second is the attack on *St. Privat* (north) by the Saxons; and the third was made by the brigade of *Kottwitz* at *Loigny*. We omit attacks on advanced posts, because we are here concerned with the tactics of the pitched battle exclusively. Wherever the infantry attacked on the plan of the modern task system, it was invariably defeated. That is especially evident at the *Mance* ravine on the 17th of August and in the front line at *Wörth*. In its attack at *Wörth* the infantry of the XI. Army Corps showed unmistakable evidence of the principles of control, and the great success of the day is partly due to the skillful, judicious, step by step progressing, leadership of the units.

Under such circumstances the divergent tactical tendencies that still exist should not have arisen. The old regulations no longer sufficed; the infantry clamored for new regulations in conformity with the requirements of war. The Regulations of 1888 (Reprint of 1886) are certainly abreast of the times in many points, but we have gone from one extreme to the other: up to that time all authority was vested in the superior leaders, and there was a constant tactical wrangle between the superior and inferior command about the powers and scope of the latter. The former regulations disregarded these claims altogether, and the matter called for adjustment, which was accomplished by the Regulations of 1888 in a manner slighting the superior command, inasmuch as the execution of the combat was entrusted to the initiative of the subordinates and every chance of control was surrendered. That is simply to put an end to all tactics.

How did we get to that point?

The most prominent champions of suitable regulations,

in so far as they have committed themselves to the press, are successively Moltke, May, Boguslawski, Schlichting, Liebert. The oldest and most prominent opponents, not so much in regard to principles as to specific suggestions, are Bronsart, Scherff, Meckel. Recently the former current was joined by Hönig and Kleim, but Malachowski has gone far beyond the pretensions of this category, and so has the *Militär Wochenblatt* during the past few years.

All concurred in the opinion that new regulations were necessary and the greater the improvements in fire-arms, the more urgent became the necessity.

In the course of time several fusions and reactions took place. Shortly before his death, the late General of Infantry von Bronsart, the man who had for a long time thrown the weight of his voice in the scales against new regulations on May's plan and whose public expressions marked him as the chief advocate of a system of control, joined May's colors and rejected the normal attack; in this case the system of control, though normal attack and control are usually two very different things.*

Meckel, in following up the important moral principle during the execution of the combat, went so far as to demand the closing together of extended lines; he became reactionary.†

Boguslawski long and strenuously championed a suitable training and tactics in various writings and numerous essays; his demands were so far outdone in the Regulations of 1888 that he also appears reactionary, though he never was; for that general neither changed nor modified his position. It is likewise with Hönig, Keim, and probably with

*See "Betrachtungen über eine zeitgemässe Fechtweise der Infanterie," E. S. Mittler, 1891.

†See "Sommernachtstraum," E. S. Mittler.

Liebert. They are all opposed to a normal attack in so far as it is understood to mean a fixed, reglementary scheme for the execution of the combat that is not to be departed from. All are agreed that deployment, forming for attack, and execution of the combat constitute three separate stages succeeding one another in time and space, for which some reglementary provisions should be made in order to render possible the control of masses in attack. All demand but one formation for movement, the single-rank, open line; but one formation for fighting, the swarm of skirmishers; but one kind of fire, skirmish fire. Boguslawski and Hönig also recommend fire while in motion.

The Regulations of 1888 intensified the dispute because the task system was formally adopted, the fullest freedom of the subordinate leaders in the execution of the action was invested with the force of principle, and the principle of control in action was surrendered. In view of the improvements of fire-arms, General von Scherff, the old and tried champion of control in action, modified his reglementary requirements in the course of time and his propositions ultimately fused, in so far as that is possible, with the views held by Boguslawski and Hönig. He contrasts the task system with control in action, not with the normal attack.*

Until he wrote the book mentioned under 3, Von Scherff did not employ the deductive method in his expositions, since up to that time he did not base his writings on the tactical phenomena of the battle-field; he was battling for principles which he absorbed from his war experience in general, and had evolved from them his system of control in

*1. "Reglementarische Studien," Berlin, 1891-92, A. Bath.
2. "Praktische Taktik und Taktische Theorie," 1893, R. Felix, Berlin.
3. "Unsere heutige Infanterietaktik im Spiegel der Auguskämpfe, 1870 um Metz," 1893, R. Felix, Berlin.

action. As long as neither Scherff nor his adherents adduced proofs, based on facts, for the soundness of that system, Scherff's opponents—*i. e.*, the advocates of our present regulations—were free to charge them with being mere theoretical speculators, whereupon opinion stood against opinion and principle against principle. In this dispute Lieutenant-Colonel von Malachowski joined with the most radical demands.* He rejects all normal action (control in action), and carries the "principles" and points of the task system to the extreme: according to him, the execution of the combat is a "horde-like" combat of masses of skirmishers conducted by the subordinate leaders. He thus concurs in the views of General von Schliechting, and these two, in their writings, are the most radical advocates of the task system.

Having in view his "Inquiries into Tactics," Hönig was meanwhile basing himself on the phenomena of the battlefield in his "24 Hours of Moltke's Strategy" and the "Struggle for the Quarries of Rozerieulles," and deep research led him to the conclusion that all actions fought in 1870, by the troops of all army corps in the sense of the modern task system, failed, and that nothing could be gained by these tactics.

General von Scherff found in these expositions welcome material for substantiating his own views, and by employing Hönig's method in his own way in his subsequent studies he was able to prove the soundness of his views to the last detail in his "Unsere heutige Infanterietaktik." Whatever may be the opinion entertained by the authorities on this point and on the Regulations of 1888, I believe that the "task battle," which was found wanting in 1870, has been adopted in these

*"Scharfe Taktik und Revuetaktik," E. S. Mittler.

Regulations, and with it a normal system, which it had been the intention to abolish as something pernicious. I am convinced that the task system is not in keeping with the times, that it should be relinquished—*i. e.*, that the Regulations should be revised and that we should return to the system of undivided authority, if the execution of the action is not to be left to the license of the subordinate leaders.

Closely connected therewith are the questions of long- and short-range fire, of the advance to effective range, of gaining the superiority of fire, and of turning movements.

In the Regulations of 1888 the task system simply becomes a normal system, since the German infantry attacks now on the task system alone. The freedom conceded to the subordinate leaders is too great, it is bound to lead to tactical license, and it has done so. It was bound to impair control and the practicability of an early development of strong firing lines. The necessity of seeking cover has sensibly dulled the requisite keenness and destroyed the observance of normal spaces. Things cannot remain that way and the signs of a revulsion have from year to year become more apparent. It would not do to wipe out whatever good there is in the task battle, and to advance some normal scheme; the question rather is one of restoring to the superior leaders the ways and means of control. Such initiative as is requisite on the part of the subordinates and can be exercised by them alone is perfectly compatible therewith. The opposing tactical tendencies are not, as formerly, "task system or normal attack"; thorough investigation has reduced them to this: controlled system, and within the same, beyond certain variable limits, task system or horde-system.

By means of a sagacious comparison* General von Scherff has demonstrated that in 1870 the Germans gained the superiority of fire only where the attacker opposed to the assailant a broader front of fire. Where that was successfully done, a strong development of front sometimes relieved the attacker from the necessity of an assault altogether. In proof he cites from the battle of Gravelotte, the events at St. Marie, Roncourt—St. Privat (north), and St. Herbert, and it would not be difficult to multiply the instances. On the other hand, all the undertakings in the center and on the right at Gravelotte failed, because the fire front did not overlap the enemy; the general might better have said: because there was no infantry fire front at all. And this, notwithstanding the concentration of an enormous numerical superiority at the Mance ravine. Here the task system collapsed completely, not the slightest advantage was derived from the great numerical superiority because in many cases lateral development (ravine theory), having been neglected in the beginning, became impossible altogether, notwithstanding that every "task leader" sought to enforce it. If superiority of fire is desired, the broadest possible front is necessary from the beginning, as well as an advance in that formation to effective range.

On account of the "ravine theory," neither frontal development nor a firing-station was attained at Gravelotte preparatory to the attack! At St. Marie and St. Privat (north) we gained both, despite the then not very ideal yet controlled system. Again, with the ravine practice we suffered much greater losses than with an early development of front. General von Scherff moreover demonstrates that when not in themselves strong enough for the assault, troops brought forward on a broad front and under

*Pages 192-194 of "Unsere heutige Infanterietaktik."

control (Guards at St. Privat, 8th Rifles and the Sixty-seventh at St. Hubert) were able to maintain themselves on the ground they had gained, whereas they invariably lacked power of resistance whenever there was no frontal development from the start (Point du Jour). These researches are important in deciding what infantry tactics should be; they must be based on undivided authority and control and thus it will ever be.

In examining the maps of the battle-fields of the 28th Brigade at Probus, of the 38th Brigade at Mars-la-Tour, and of the 1st Guard Brigade at St. Privat, any one will admit that under *modern* conditions and with a judicious use of the ground, open lines could be moved forward without stop to within 600 meters of the enemy. Troops will hardly ever have to face a more unfavorable situation. At Probus as well as at Mas-la-Tour and St. Privat the combat in front would, according to modern ideas, be *chiefly* carried on by the artillery, which would be quite able to perform that duty; in all three cases sufficient cover could be found for the infantry to approach by various methods to within effective range (600 meters), and, advancing thence by rushes, to gain an additional 150 meters, if greater fire effect may there be expected. Notwithstanding the difficulty of such situations and despite modern fire-arms, entire brigades, *led* and *controlled*, could in this way be brought to within 600 meters of the enemy; when at that point they are flung into the destructive fire action, *superior* leading ceases, the further conduct of the action rests with the *subordinate* leaders, with the efficiency of the individual soldier and in the timely employment of sufficiently strong reserves on the part of the superior leaders. I do not believe that much sound argument could be advanced against this.

At any rate, we must rigorously adhere to the basis of

the *whole*—namely, consideration for man's frail nature—and for that reason most of the men should be kept as long as possible under the eye and will of the leaders. The problem of bringing the greatest possible number of rifles to within 600 meters of the enemy is therefore not to be entrusted to the task system, but is a matter of brigade leading, and is best solved by skillful use of the ground and by a smart advance. *That will remain true despite all improvements of the rifles.* In advancing to the first firing-station the infantry would of course have to be vigorously supported by the artillery. The latter will be able to do so only by anticipating the opposing artillery in getting the range. If the enemy's artillery is not thus anticipated, the advance of the infantry will soon reach its limit, and infantry will be restricted to fire-action at long range.

II. Results of Surgical and Ballistic Experiments.

According to page 50 of "*Die Geschosswirkung der neuen Kleinkalibergewehre*" ("Effects of the New Small-Caliber Rifles"), by Professor Dr. Paul Bruns, Tübingen, 1889, H. Laupp, one and the same bullet goes through 4—5 ranks at a range of 100 meters, even when it strikes the heaviest bones of the human body; through 3—4 ranks at 400 meters, and through 2—3 ranks at 800—1200 meters. Experiments with the Lebel rifle in France and with the Mannlicher rifle in Austria have given similar results, so that, as regards the ballistic qualities of their rifles, the opponents will in the future be about on an equal footing.

Since the appearance of the Third Edition of this book these data have been confirmed by further experiments in many respects, with which the tactician should be familiar.

I shall therefore mention them briefly, and in doing so follow Dr. Johann Habart.*

With the assistance of the Austrian military authorities, Dr. Habart conducted a series of experiments on live animals and comparative experiments on human corpses. In addition he made examinations of suiciders, of men accidentally killed on the target-ranges and at labor riots, and took account of the phenomena on the various theaters of war from that of 1870-71 to include the Chilian War of 1891.

Near Hermannstadt a rifleman was mortally wounded by a shot through the occipital bone from the Mannlicher rifle at a range of 2700 paces.

On May 20, 1890, a platoon of 16 rifles at Nürschau fired 5 volleys into a mob of workingmen at a range of 30—80 paces. It is stated that 10 bullets made 32 hits, making 3—4 and perhaps 5 hits for 1 bullet. Seven were killed on the spot, 6 died the next few days of their wounds, 19 wounded recovered. The proportion of the killed to the wounded is therefore 1:3.5; almost the same as at Biala, where, out of 18 hit, 4 were killed. The destructive effect of the bullet at short range is thus proven beyond a doubt.

The loss of the Balmacedists at Concon was about even in killed and wounded, at Placilla the proportion is reported to have been 1:2.57.

At Cilli a man in the act of aiming was hit by an 8 millimeter bullet (Mannlicher) which had passed through a butt of earth 140 centimeters in thickness. The projectile remained in the body. The man died on the sixth day.

At a range of 3000 meters, a bullet entered the thorax of a woman and remained there.

*Fragment of an experimental study and lecture delivered at the Austro-Hungarian Army Firing School at Bruck on the Leitha, July 1, 1892.

At Rosenkreuz three of Witboi's men were killed by one bullet (German mod. 88).

The results at Concon and Placilla I have already mentioned; the losses of the inferiorly armed defender were almost double those of the attacker, one-third of whom at the most were armed with Mannlicher and Gras rifles. The moral effect of the superior armament on the Balmacedists must have been such as to shake them; these troops, however, should not be regarded in the same light as good European troops. Hence the tactical importance accorded to these various phenomena in Chili should be a qualified one.

Among the experiments here enumerated, those made at the firing schools of the various armies should also find a place. The results of these experiments have not become much known publicly, and in Germany particularly profound silence has been observed in that respect. But, on the one hand, we can draw very conclusive deductions from the German Regulations on these points; on the other hand, they are confirmed by experiments in Austria and France. Here should be mentioned in the first place the valuable data given by Lieutenant-Colonel Regenspursky.* We read there:

"Recent firing experiments have proven that a closed platoon will suffer sensible losses at 1600 meters (15 per cent); that the small company column forms a good target at 2100 paces (44 hits out of 215 shots), and that a battalion in the act of changing from column to a broader formation received 56 hits out of 400 shots (18 per cent) at 2000 paces.

*"Studien über den taktischen Inhalt des Exerzirreglements für die k. u. k. Fusstruppen" ("Studies on the Tactical Contents of the Drill Regulations for the Austro-Hungarian Foot Troops"), Wien, L. W. Seidel und Sohn, 1892.

"It was found at the same time that at medium ranges troops in double rank suffered four times, and in single rank double, the losses that troops in single open line, with 1 pace interval between men, did at the same distances. The results of these peace experiments make it advisable to deploy the platoons at long ranges (1500—1600 paces), to group the companies designated for the fire action in skirmish lines and company reserves when 3000 and 2000 paces from the enemy, while battalions and larger units will have to relinquish the deep column on entering the zone of infantry fire (about 3000 paces)."

Comparative experiments were next made in Austria, based on the principles of the reglementary frontal attack on one hand and on those of K. v. K.'s battle attack.* "The reglementary attack," says Regenspursky, "lasted 26 minutes and 38 seconds, of which 12 minutes and 18 seconds were fire pauses and 14 minutes and 20 seconds were taken up in firing. Total hits, 27.7 per cent. The so-called battle attack (two ranks, beginning at long distances, constantly passing each other in double time and delivering a rapid fire, are to reach the enemy as quickly as possible) lasted only 18 minutes and 40 seconds, of which 7 minutes and 40 seconds were pauses and 11 minutes were consumed in firing. Total hits, 20 per cent. The reglementary attack came within 200 paces, the battle attack within 100 paces of the enemy. Alternate rushes, passing of the front line, and firing, was done between the distances of 1400 and 600 paces from the enemy, the battle attack scoring 49 hits out of 700 shots, or 7 per cent, while the reglementary attack at the same distances scored 117 hits out of 700 shots, or 16.7 per cent.

*"Wie sollen wir im nächsten Kriege angreifen?" K. v. K., 1890, R. Felix, military publisher, Berlin.

The battle attack thus proved itself inferior in fire power, and the men were exhausted and unfit for further service for the time being.

Between 600—100 paces from the enemy the battle attack scored 433 hits out of 1672 shots, or 25.6 per cent; the reglementary attack between 600—100 paces 563 hits out of 1582 shots, or 35.6 per cent.

The procedure was now reversed, the battle attack and the reglementary skirmish line being shot at by the defender from 1300 paces on.

"Between 1300—700 paces the defenders scored on the targets of the battle attack 231 hits out of 700 shots, or 33 per cent, and on the targets of the reglementary attack only 128 hits out of 1400 shots, or 9.2 per cent; between 600—200 paces the targets of the battle attack received 590 hits out of 958 shots or 61.5 per cent, the targets of the reglementary attack 649 hits out of 1514 shots, or 45.8 per cent. The average number of hits received by the target of the battle attack was 51.2 per cent; of those of the reglementary attack, 32.2 per cent."

In all armies the question of firing while in motion is being agitated, because during the fire pauses of the attack no effect is produced on the enemy at the very time when the latter can produce his greatest fire effect. With a view to having the fire in motion officially adopted, General Buisson invented an attachment to the rifles, which I shall not discuss here.* Firing experiments lasting two weeks were then made at the camp of Châlons-sur-Marne with detachments of 20 men each of medium firing proficiency. The average results were:

*Formation und Taktik der französischen Armee, Berlin, 1892. R. Eisenschmidt.

1. Uncontrolled fire at the charging gait from 200—100 meters; 18 per cent hits.
2. Uncontrolled fire at the charging gait from 100—50 meters; 39 per cent hits.
3. Uncontrolled fire at double time from 200—100 meters; 18 per cent hits.
4. Uncontrolled fire in double time from 100—50 meters; 42 per cent hits.
5. Firing by command, first at the charging gait, next in double time, from 300—50 meters; 21 per cent hits.*

The rapidity of fire was 10 shots per minute; the targets were 2 meters in height, posted on a front of 20 meters, equal to the front of the platoon.

The fear lest the men might hit each other proved groundless. According to Buisson, the attack with fire should begin 400 meters from the enemy at the charging gait, the fire being kept up until within 100 meters from the enemy. Fifteen paces in rear of the first skirmish line follows a second line to promptly fill the gaps in front; 15 paces in rear of the second line closed bodies are to follow to give the attack energy and momentum.†

According to the Firing Instructions, the German rifle model 88 has an initial velocity of 620 meters, and a range of 3800 meters with an elevation of 32°. Its projectile will pierce 45 centimeters of pine at 400 meters, and 25 centimeters of pine at 800 meters, and penetrates 50 centimeters into fresh sand at 400 meters and 35 centimeters at 800

*Charging gait, 140 meters per minute; double time, 180 meters per minute.

†As is well known, bullet-proof uniforms have been suggested as protection against modern fire. I do not believe in them. For defensive purposes, however, the "Holstein shield" might be taken into consideration, which has been made part of the Danish equipment. The idea may be susceptible of improvement, and for purposes of defense, is not without advocates in France.

meters; thin brick walls are insufficient protection, as they are perforated when several shots strike the same spot.

The average ordinates of the bullet in meters above and below the horizontal line of sight are 0.2 at 200 meters; 0.5 at 400 meters; 1.0 at 600 meters; etc., at 800, 1000, 1200, 1400 meters.

The vertical dispersion at 200 meters is 25 centimeters, the horizontal dispersion 20 centimeters; at 400, 600, 800, 1000 meters these figures are 70, 42, 140, 64, and 206, 112, 298, 160 centimeters, respectively.

With the fixed sight all objects representing a target 0.35 to 2.0 meters in height lie within the dangerous space; with the small leaf all targets 0.85 to 2.0 meters in height; with the 500-meter sight all targets 1.70 to 2.0 meters in height; with the 600-meter sight and with targets 0.85 meters, 1.20 meters, and 1.70 meters in height the dangerous spaces are 48, 72, and 111 meters; with the 800-meter sight and the same height of target these spaces are 25, 38, and 54 meters, respectively.

When the arm is properly managed, every shot may be expected to hit: all objects within 250 meters; single kneeling enemies up to 350 meters; a kneeling file (men close alongside each other) up to 500 meters; a standing file (men close alongside each other) and single mounted men up to 600 meters.

With regard to distances, it is stated that up to 600 meters they are short, thence up to 1000 medium, and beyond 1000 meters long ranges.

The point-blank range of the fixed sight is 250 meters; of the small leaf, 350 meters.

Moreover it is required that the men should be expert in judging distances up to 600 meters, and officers, non-commissioned officers, and bright men up to 1000 meters.

"Looked at purely from the point of the theory of ballistics," say the Firing Instructions, "columns will be much more vulnerable at distances of more than 1000 meters than troops of equal strength formed in line."

It would be insufficient to consider the effect of the rifle alone, since the effect of the artillery projectile has likewise attained an equal augmentation, under certain circumstances. We will not go into details here; a general reference is sufficient to remove any doubt in that respect when taking into account the improvement in the effect of the shrapnel. While the cone of dispersion of the bursting shrapnel spreads the bullets forward and sideward only, still the cone is of such dimensions that, if the range is estimated with approximate accuracy, it partakes of the characteristics of the former canister even at the longest ranges. On that account it has become the principal projectile of the German field artillery, which may be said to have fought the War of 1870-71 with the common shell only. The effect of common shell has also been much increased at all ranges, and then there is the effect of high-explosive shells to be considered, but in the case of the latter it is necessary to determine the time and height of burst with great accuracy. High-explosive shells scatter their fragments, not only to the front, but in all directions—*i. e.*, forward, laterally, to the rear, and downward. This should be kept in mind in connection with positions in rear of walls and similar cover. The high-explosive shell has thus to a certain degree solved the question which presented great difficulties in active field operations and could not be solved except by indirect fire. But as the exact estimation of the range is difficult, and as the fragments of the high-explosive shell up to date are too many and too ineffective, the hopes at first based on the torpedo shell have not been

completely fulfilled; this question of projectile may not be considered as closed. The defender's first endeavor will be to beat down the enemy's artillery, and the attacker will pursue the same object with regard to the defender's artillery. In this endeavor artillery alone may not always succeed and the coöperation of infantry may be required. It is also quite plain that modern field artillery should possess a very high degree of mobility. Field artillery is not to destroy fortifications, its effect is to be produced by the large number of its fragments; it is therefore possible to make it light and mobile. It should be capable of covering long distances at a trot in large bodies, of passing marching columns, and of deploying *en masse*. We do not propose to inquire as to how far the German field gun meets these requirements. What has been stated of the German field artillery applies equally to the French; the state of the Russian field artillery cannot be fully determined at this time; but the Austrian and Italian field artilleries may be assumed to be on a level with the German.

The sum total of these expositions is that the armaments of infantry and artillery are everywhere on about the same level. No one is likely to possess a notable superiority of armament, and superiority of power may be gained only by training and leading.

III. Smokeless Powder.

Of all the inventions made since that of gunpowder, none probably has exercised such great influence on tactics as has that of smokeless powder. Aside from other ballistic properties, the new powder imparts to the projectile a much higher velocity, which should be fully appreciated in tactics; it is not necessary here to go into details, because the practical results are already laid down in the Firing Regulations

for Infantry and Artillery. It is requisite, however, to briefly review the optical and tactical sides of the question for all arms.

While the use of smokeless powder has not done away with all smoke, either in the case of the rifle or of the gun, still smoke has been so much diminished that it is *always transparent*; it may be discerned by a close observation, and in a clear, humid, and calm atmosphere the smoke is greater than in a warm, dry, and agitated atmosphere. No matter how lively the fire, the smoke never obstructs the view of the rifleman or gunner; they can follow the projectile with the eye, as it were, and the rifleman and gun are themselves exposed to view unless otherwise concealed. Before they can be seen by the enemy, the latter is delayed by enterprises necessary to gain a first glimpse of the outlines of the position. This would seem to render reconnoissance more difficult and to facilitate the execution of the combat. The former is generally admitted; the latter cannot be sufficiently determined in peace.

Unobstructed view in combination with the great range of the small-caliber rifle gives a much greater importance to infantry fire. To-day infantry is *always* able to see and sometimes to see *far*, and to take advantage of *both* by the *long range, flat trajectory* and *great penetration* of its arms. It will be able to observe the movements of large bodies of cavalry from their inception and to take them under fire at such ranges as to diminish the value of that arm as against infantry, because in human judgment *surprise* must be presumed to be possible only in very exceptional cases. Cavalry patrols will rarely be able to discover individual riflemen promptly. The reconnoitering powers of cavalry are thereby much impaired.

The new powder and the new arm likewise confer a

great advantage on infantry, when opposed to artillery, unless the latter has reconnoitered the ground in front and has protected itself from effective infantry fire by skirmishers in its front. In such a case artillery might be suddenly subjected to so great a loss of horses and men that part of it may be unable to come into action and that another part may not get the range as quickly as it should when opposed to artillery. In 1870-71 our artillerymen feared the enemy's (long-range) *chassepôt* fire more than that of his artillery, and the German artillery suffered in fact much more from the former than from the latter, which, however, is to be attributed in part to the inferiority of the opponent's gun. Since guns and their effects are now approximately on the same level everywhere, and since the opponent possesses a rifle more perfect than that of 1870, it is to be inferred that in future *our* artillery will encounter much greater difficulties than in 1870-71, while our infantry will oppose to the enemy an equally good arm and is now better off in that respect. I believe, therefore, that (1) before coming into action artillery should make a more thorough reconnaissance than formerly, and (2) that it should make it a rule to protect its flanks and front by considerable skirmish lines thrown out in front. If either or both are omitted, artillery may at first find itself in much more serious difficulties than was the case, for instance, with the artillery of the IX. and VII. Army Corps at Gravelotte. Both instances enjoin caution in this respect.

On the other hand, when artillery has made a thorough reconnaissance and has protected itself against hostile infantry fire by infantry skirmish lines thrown not less than 500 meters to the front—things which have ever been required by tactics—then the artillery can draw extraordinary advantages from the absence of smoke, and, when skillfully

handled, its action may become decisive, provided it knows how to shoot, provided it comes into position with as little exposure to the enemy's fire as possible, and provided it anticipates the enemy in getting the range by means of correct observation and direction. Instruction in firing is imparted in peace, and it may be expected that in future our artillery will know how to shoot. Against this it may be stated, with much truth, that the firing in action is not equal to that on the firing-ground, and that dead gunners cannot be replaced, or not without difficulty; that, however, should not be allowed to divert us from what is rational—*i. e.*, from getting the range quickly. That accomplished, the artillery at once gains great power, since the absence of smoke makes laying and observation always possible, while, on the other hand, the diminished recoil permits of greater rapidity of fire, and all these causes combine to disproportionately increase the effect of the improved projectiles. Not only that: up to this time the so-called concentration of fire against the decisive points was more a theoretical idea than a tactical possibility. The great amount of smoke soon enveloped long lines of artillery, so that laying, observation, and control of large bodies of artillery were impossible; the effect was correspondingly diminished. That has been changed. Moreover, the masses of artillery may now be posted closer together or in tiers, and can always develop their full fire power. That may not always be advisable, still it may offer advantages in certain circumstances; for instance, after gaining the superiority of fire. If the artillery has been well trained in peace, if it has learned how to shoot and how to observe, it cannot be denied that the effect of artillery will be increased to an extraordinary degree. It is but necessary to realize that to-day 36 guns emit 3000 fragments per minute! When artillery possessing such efficiency

gains the range more quickly than the opponent, the existence of the latter will be limited to a very brief space of time and one main part of the work has been accomplished for the assailant! To be sure, artillery will not be able to dispose of good infantry ensconced in skirmish lines in the folds of the ground, and it is and will be the duty of infantry to drive them away. Neither will cover under certain conditions be of any avail to the enemy's infantry, cavalry, or artillery, since field artillery is now able to attack any kind of troops under cover, though this question cannot as yet be considered as closed. The artillery possesses the additional great advantage of being able to determine the distance by means of its appliances, which the infantry is unable to do at long range; it has to depend on getting the ranges from the artillery.

It may be concluded that well-trained and well-led artillery has become *the long-range arm par excellence and under all circumstances*, and that according to theory the *decision* will be brought about more quickly than formerly, if artillery and infantry concentrate their action on the same object, which was impossible before the introduction of smokeless powder.

Smokeless powder has some disadvantages, inasmuch as it will be more difficult to make out the position of the hostile infantry, but the disadvantages are common to both sides and may be greatly diminished by the use of good glasses. Against this it may be mentioned as an advantage that the coöperation of infantry and artillery, the leading, is facilitated, the more as the sound, though it has not become weaker, has become *shorter*. Since seeing and understanding are the prerequisites for all intelligent human action, it must be admitted on the whole that the advantages of smokeless powder far outweigh its disadvantages, and that it is only now that the two principal arms possess the prerequisites for

powerfully preparing an attack in a brief space of time. Heretofore existing tactical rules are not abolished by this invention; on the contrary, it is only now that they become applicable in their full extent.

In an outflanking attack, even against a prepared position, (1) the defender will suffer much more from the *combined* fire of artillery *and* infantry than heretofore; (2) breastworks and trenches do not by any means afford the requisite cover; hence (3) the inventions more than ever call for outflanking, and (4) outflanking is bound to be more productive of results. The conclusion, therefore, would be that the prospects for the success of an attack are rather increased than diminished. This is from the theoretical standpoint!

If I be permitted to recall here the example of Probus, where on one side the wood of Popowitz enabled large bodies to be brought to within 600 meters, and where on the other side (Nieder Prim) a covered approach to within 200—300 meters was practicable, and if we imagine these positions to be held by troops with modern armament, we might conclude that the rôle of the attacker has not become so very much worse, since battle-fields of like character will rather be the rule than the exception in the future. More stress would in future be laid on outflanking by taking more ground by way of Nieder Prim, but even against the front, the space Probus—Nieder Prim, strong skirmish lines could be brought up unobserved to a similar distance *through the fields of rye as tall as a man, so that the hostile artillery could not see these skirmishers or observe their progress no longer betrayed by smoke, and that, approaching thus under cover, the skirmishers would render the position of the artillery untenable by their fire at a range of 1000 meters or less.* The conditions will not always be similar; still the example shows that they did exist, and why should they not recur? It follows that in similar situations the

defender would have to burn the rye-field to a distance of 2000 meters; even simple hedges and slight folds of the ground may become very troublesome to artillery.

In any event there are two reasons why the tactical employment of artillery should be modified: the first lies in the improved rifle; the second, in the increased fire effect of artillery. Both become noticeable in tactics, in the first place, by the greater range of the projectiles. The German Infantry Drill Regulations state very correctly: "In action against artillery it should be observed that that arm has the superiority of fire at ranges greater than 1000 meters, and that the chances only become equal at ranges of less than 1000 meters. Cases may be imagined, however, where the action of infantry may be effective against artillery at greater ranges, but it will call for the expenditure of a considerable amount of ammunition."

I am inclined to believe that in many cases it will be possible for infantry to direct such a fire against artillery exposed to view, at ranges greater than 1000 meters, that it will be impossible for the latter to remain in action, provided the exact range is found and the fire is controlled. This advantage will chiefly accrue to the infantry of the defender, because it may be assumed that in most cases it will be able to lie in wait for the artillery. The defender's artillery will also probably prepare to greet that of the attacker with mass fire at known ranges. From both of these suppositions I conclude that the artilleries of the attacker and defender will try to fight it out at long ranges, but will find a natural limit imposed on themselves by the optical conditions of the battle-field. At any rate, artillery should learn in peace how to deliver an effective fire at long range, and be trained in *one* kind of mass fire that can be controlled. In combating the defender the artillery of the attacker will therefore

strive to develop as many guns as possible, to gain a favorable position, and to take it up without exposing itself; during the action it should make as few changes of position as possible. In most cases I deem it neither useful nor advisable that artillery accompany the infantry attack. The positions of the artillery will vary between 3500—1200 meters; the principal distance will probably be 2500 meters, the fire of shrapnel at these distances being effective—nay, annihilating, if the artillery promptly gets the range. It may therefore be assumed that the artillery battle will under certain circumstances be of brief duration and of increased severity, and that there will be pauses in the artillery fire; at any rate, it seems to me that such would follow theoretically from the endeavor to promptly get the range and to develop masses of artillery, in combination with the greater effect of fire.

Artillery, however, is a rather complicated arm, and at equal distances will be more endangered by the enemy's proximity than infantry. It becomes the duty of the infantry to keep the hostile infantry as far away as possible.

It is thus necessary for artillery to be protected by infantry in front, and to take as good cover as possible. At any rate, smokeless powder calls for much greater proficiency in firing than black powder, and for greater circumspection and prudence on the part of the leaders, in order to select a position so close and so effective that the fewest possible changes of position may become necessary.

The greatest change in tactics has beyond doubt been brought about by the element of uncertainty resulting from the use of smokeless powder. It enables infantry to conceal its weakness and to mislead the enemy to enterprises that require much time. The defender in particular will strive to conceal his real position as much as possible and to

employ his artillery accordingly. For his artillery once revealed, his real position is disclosed, which would materially facilitate the task of the attacker. Judging from peace experiences, I believe it very improbable that cavalry patrols and reconnoitering officers will ever be able to promptly ascertain the enemy's position. These means may help to locate the enemy's flanks, and I place no great expectations on the captive balloon in field operations. Everything else will have to be found out by fighting, and this is the new feature, particularly for artillery.

It is my opinion that this arm is bound to become a "reconnoitering arm" to a high degree; that instead of depriving the advance guard of artillery, the same should be made very strong in that arm; and that, as previously emphasized, artillery should possess great mobility. The mounted soldier can no longer approach sufficiently near for correct and sufficient observation. Should he attempt it, the chances are 100 to 1 that he will not return, and his observations, if any, will be lost. The deployment of strong infantry, in order to gain information by means of its action, requires much time, and there is nothing left for that purpose but a skillful and vigorous employment of artillery. In such a case the defender, when his main position is involved, must show his hand, if he does not wish to succumb at once; if it is merely an advanced position, he will be unable to hold it and will betray the main position by his withdrawal. The place of the artillery in the marching column should therefore fulfill two requirements: 1, vigorous reconnaissance; 2, to advance from the preliminary deployment with the greatest possible superiority in point of guns to the principal deployment for subduing the enemy's main position. It is unnecessary to state that great difficulties will have to be overcome in doing so.

But it will no more be possible for artillery to effect the reconnaissance alone than it would be advisable for it to take up its principal firing station without having infantry thrown out in its front. It is unable by itself to do either; it requires in either case the protection of infantry against the enemy's infantry.

It thus follows from smokeless powder, as a general result, that infantry and artillery are tactically rendered more interdependent, and that tactical reconnaissance will have to be effected chiefly by these two arms. Smokeless powder does not facilitate that kind of work in any way; it rather makes it more difficult in many particulars through the element of uncertainty.

Every discharge of the field-piece shows a very bright flash, and if the gun is on loose ground, the flash is accompanied by a very conspicuous cloud of dust. If the gun stands on sod, grass, etc., or along the edge of a wood, the dust is replaced by vapor plainly visible against the green ground. Artillery will thus betray its position in a very conspicuous manner. Its fire will not only betray the general location of the battery, but will make it possible to count approximately the number of guns, which was never the case heretofore. Artillery should therefore more than ever be bent on concealing its position from the two firing branches of the enemy, and indirect fire should not be condemned outright as an artifice.

The absence of smoke has made artillery an arm whose total victory or destruction lies close together; its fate may depend on a moment, on a single step, but chiefly on the action of the opposing artillery. It became thus necessary for artillery to adopt an entirely different tactical spirit, which, as we have stated, it has done. It was reserved for smokeless powder to make artillery an arm capable of

dealing absolute destruction; but, though the technical arrangements are complete, much remains to be done to derive from them the ultimate tactical advantages. It is not opportune to enter into these details.

Mass effect through individual effect is to-day the tactical law of artillery as well as of infantry. The latter knows now only the action of masses of skirmishers, and all it had to do was to modify its principles. Smokeless powder has not detracted from the value of cavalry, but has relegated its action to other phases and modified the form of the action. If cavalry knows how to utilize these moments, it may enhance the value of the victory enormously, but it will no longer decide battles!

The moments of "tactical doubt" will increase in number and duration, caused by the element of uncertainty imparted to tactics by smokeless powder.

IV. Tactical Deductions Regarding the Attack, from the Experiments of Bruns, from the Ballistic Properties of Small-Caliber Rifles, and from the Properties of Smokeless Powder.

The stated experiments of Professor Bruns, of Dr. I. Habart, of Professors Busch, Kocher, Reger, von Billroth, and von Bardeleben, and of the Frenchmen Déhorme, Chauvel, Nimier, Breton, and Pesme,* and the prescriptions of the Infantry and Artillery Firing Regulations are not only of surgical and ballistic, but of high tactical importance in several ways. The fact that one and the same projectile pierces 3—4 ranks at 400 meters, 2—3 ranks at 800—1200 meters—the distance of 100 meters, at which 4—5 ranks are pierced, is disregarded because I believe that the attacker will rarely reach that

*"Recherches expérimentales sur les effets des arms nouvelles et des balles de petit calibre à enveloppe résistante," *Archiv général de méd.*, Octobre, 1888.

range before the enemy has abandoned his position—simply signifies when translated into tactics that formations four ranks deep at 400 meters and three deep at 1200 meters would receive 4 or 3 times as many hits as a single-rank formation. These results were obtained on level ground, but that does not diminish their value, and it would be foolish to contend that such level ground will not be encountered in fact, and that firing on the battle-field differs in result from that of the firing-grounds.

With respect to level ground, an inspection of the maps of Probus, Mars-la-Tour, St. Privat, and particularly Loigny, will show that battle-fields 15 kilometers and more in extent do show extensive plains, and it would not be difficult to multiply the number of examples if it were intended to do so in this book. Military history shows that exceptional features of ground are not so uncommon, and it is quite natural that he who remains on the tactical defensive on account of his numerical inferiority, or who perhaps intends to remain on the defensive at the beginning for other—even purely tactical—reasons, or for other reasons springing from the general situation, will select positions with an open field of fire in order to make the task of the attacker difficult and to take full advantage of the properties of his own fire-arms. It may also be expected that at points which may be approached to within 600 meters or less, the defender will construct entrenchments enabling him to increase the effect of his fire against such points by a concentration of fire at short range; nor will he disdain entrenchments on his flanks and fronts where there is a wide field of fire, (1) to break as much as possible the force of the cross-fire of an outflanking enemy, and (2) as protection against artillery, the true representative of long-range fire. Incidentally it may be remarked that modern shrap-

nel fire makes this indispensable for the defender. Anticipating somewhat, I will state that the width of front covered by a shrapnel is about 60 meters. The distribution of the hits is almost in accordance with the law of dispersion—*i. e.*, counting from the center, it amounts to 25, 16, 7, and 2 per cent. This proportion is the same at *all* ranges. After regulating its fire, a battery will make 78 hits with every shrapnel—*i. e.*, it will score that number of hits against a detachment of infantry with a front of 60 meters. It follows that between 2500—1200 meters the subordinate leaders of infantry should be at liberty to diminish the front by every possible means while crossing that space. I am here following the statements of the *Journal des sciences militaires* and abstain for obvious reasons from making other statements. At any rate, between 2500 and 1200 meters the advance should be regulated by different considerations from what it is at shorter ranges.

In all cases where tactical reasons *demand* the advance of infantry on an extended plain, 800—600 meters from the enemy may be assumed as the nearest distance, and in no case should it be less than 400 meters. The 38th Brigade has demonstrated, at Mars-la-Tour, that with good troops and poor formations it is possible to rush forward over open ground until intermingling with the enemy and under a fire which cannot be much exceeded by the small-caliber rifle, though I do not by any means recommend this exhibition of bravery as a standard example in tactics. The 1st and 3d Infantry Brigades of the Guard have demonstrated, at St. Privat, that it is possible for the attacker, if *sufficiently* strong, to hold out for hours on open ground and under extraordinary losses notwithstanding the use of antiquated forms that should long have been discarded. Both examples are to be condemned from the tactical point of view,

but are worth taking to heart, though that resistance, when closely examined, does not seem to constitute such a great feat of bravery. The 3d Infantry Brigade of the Guard possessed sufficient fighting power to repulse about six vigorous counter-attacks, and both brigades took part in the last acts of the victory, right on top of an action which was not quite in the ordinary, to be sure, and which had consumed almost all their fighting power. Therein is where the extraordinary lies! Where the open plain *cannot* be avoided, there is but *one form of movement and combat* under the enemy's fire, the *single-rank* skirmish line. The leaders should endeavor to continue the *forward movement* as long as possible, because every halt takes from the *vigor* of the movement. To deny this is to deny human nature. In view of the ballistic properties stated in the Firing Regulations, infantry may in such cases be expected to do what can reasonably be expected from it at ranges from 1000 to 600 meters—namely, to keep the enemy under an uninterrupted skirmish fire. If broad columns or closed lines were used between 2500 and 1200 meters, the losses would amount to annihilation according to the figures quoted. The Regulations should therefore indicate the best formations for advancing under infantry* and artillery fire, because the zones of fire differ considerably. It will be rare indeed that shrapnel fire will have to be feared at 1200 meters. This difference in the method of advancing again calls for control.

The proportion of killed and wounded of the 38th Brigade on the 16th of August, 1870, was 3:4. This singular fact, which has heretofore not been closely examined, may be explained in this way, that the brigade moved within the zone of *explosive effect* of the Chassepôt until intermingling

with the enemy and back again—i. e., $400 + 400 = 800$ meters.*

Still another point is to be mentioned here: the experiments of Beck† and of Bruns (pages 49-52) have demonstrated that down to 300 meters the wounds inflicted by the small-caliber rifle will be relatively less dangerous, because the penetrative force and hardness of the bullet make clean wounds without dangerous splintering of bones. Men hit elsewhere than in the head, heart, throat, bladder, etc., may in most cases count on recovery. The man is merely placed *hors-de-combat*, and crippling and mutilation are not to be feared so much as with the former infantry bullet. The action of the many, but small, fragments and balls of the artillery projectile is similar. But wounds inflicted at ranges between 300 meters and the muzzle of the rifle are of very severe character on account of the explosive effect, and here the proportion is reversed. All classes of the army should be familiar with these things, especially the officers, as salvation or destruction may depend on whether they take them in account or not. In view of the modern method of fighting with swarms of skirmishers, the scientific and *moral* forces, particularly of the common soldier, should under all circumstances be strengthened in the first place. In addition to other things, the modern officer should be expert in physics and psychology; otherwise he is nothing but a cor-

*Billroth and Bardeleben are of the opinion that the proportion of killed to wounded on the battle-field will in the future probably be rather increased than diminished. The mortality among the wounded may, on the other hand, be expected to diminish considerably. It was almost 26 per cent among the Russians in 1877-78, 12 per cent among the Germans in 1870-71, 6.6 per cent among the Austrians in 1878; in 1888 it rose to 9.5 per cent, and fell in 1885-86 to 2 per cent. The latter figure closely approximates the experiences in Chili.

†B. von Beck, "Ueber die Wirkung moderner Gewehrprojektilen" ("The Effect of Modern Rifle Projectiles"), Leipzig, 1885.

poral or a tradesman. None wants to be that; his pride would rebel against it. The moral strength of the ordinary man—and the great majority are ordinary men—is *increased in the same degree as he knows that the dangerous character of wounds from infantry bullets is diminished*. Men knowing themselves exposed only to temporary injury will act with more dash than if they expect death from every bullet with more or less certainty. This is the state of affairs, and what the above named scientists have ascertained should be *disseminated throughout* the army. It is not merely a surgical matter; it is also a *tactical* one, for the simple reason that the *efficacy* of the small-caliber rifle is such between 600 and 400 meters that it is not necessary to go nearer unless it can be done under cover, or to enter that zone where the wounds from the small-caliber rifle are of terrible severity—i. e., from 300 meters on.

If it is possible to avoid that zone without sensibly impairing the efficacy of our own fire, then it should be made a law in tactics which should be ingrained in every one, leaving the matter of human nature entirely out of consideration. For mere selfishness and the motive not to destroy our material fighting forces ourselves senselessly through ignorance and want of judgment and not to render ourselves incapable of fighting demand that these matters be made known, that they be thoroughly weighed and taken into account. War cannot be attractive except as an art; art alone will carry us over its vexations and will lead us to victory. If it degenerates into senseless butchery, it becomes repulsive and loses everything noble that science and art may impart to it. It sinks to the level of a brutal trade; brutality stifles all that is beautiful in any art. Unfortunately, great artists are not always found in the places they ought to fill, in consequence of the fact that officers are

almost systematically trained to condemn the sciences. When war breaks out after a peace which, though affording many leisure hours for study, has been idled away, many "leaders" find themselves as unfamiliar with their own branch as though in a strange world! Some do not know how to act, others lose their heads; they have not learned to understand what *intellectual* power may accomplish, and their ignorance and lack of tactical skill put thousands in the grave and rob the fatherland of them.

In the Firing Instructions ranges up to 600 meters are called *close*. It follows that at that-point there occurs a palpable restriction to the ballistic properties; that up to that point the effect is fairly even (though increasing up to 300 meters so as to amount almost to annihilation); hence we are justified in demanding that, as a rule, the zone of the explosive effect (less than 300 meters) be only entered when there is cover, when the enemy is shaken, when his strength is gone, and when he is ready to withdraw. As regards results, it makes no difference in the conduct of the fire action, assuming, of course, a good field of fire, whether the fire is delivered at 400, 500, or 600 meters; on the other hand, the explosive effect, the power of penetration, and the flat trajectory make it well worth while considering whether the increased losses and the increased severity of the wounds should not, as a rule, forbid an approach to within 300 meters and over. In my opinion it is impracticable in the pitched battle on purely tactical grounds.

People warning others against orthodoxy ought themselves to be the first to fight shy of it. The explosive effect of the old Chassepôt extended over a distance greater by 25 per cent than that of the modern Lebel and Mannlicher rifles—*i. e.*, 400 against the present 300 meters (Bruns, page 51); yet I witnessed a case myself where we advanced over

a free field of fire (Mars-la-Tour) until we in part intermingled with the enemy and the rest reached an average distance from the enemy of 100 meters. Other cases I witnessed in the January actions at Château Renault, where I succeeded in an early morning action (January 6th), notwithstanding the apparently level character of the ground, in conducting a half-battalion divided into two company columns, under cover, to within 250 meters of the enemy's skirmish line, after showing the same road to a horse battery and to a squadron of the 3d Cuirassiers, all of which used it on their advance and on their return without notable losses, although the hostile bullets rattled like peas against the tile roofs of the village of Vilthion, which was one kilometer in length and ran parallel to this road for some distance. Lieutenant de Rège and I never dismounted in traversing that distance under a very severe rifle fire, and neither was hurt. Subsequent to our retreat, in hunting up a company, 12th—57th (Lieutenant von Kehler), which had been forgotten, at the southwest exit of this uncanny village defile, I again galloped throughout the length of the village, whose southern side had meanwhile been occupied by the enemy, and pointed out to that company a road around the north of the village by which it effected its retreat, likewise without much loss. On meeting Mr. von Kehler (now commander of the 71st Regiment), at Berlin, in 1889, he again expressed his thanks to me. On the morning of January 7th I witnessed an assault on the village of La Garionnière by F. and II.—57th, where the attack movement was elegantly carried out in close formation by two companies of the II. Battalion, notwithstanding the good field of fire and the firmness of the enemy, while the major part of the fusiliers, who were fighting in skirmish lines, did not gain ground as rapidly as those two companies. It should be stated, how-

ever, that the fusiliers had borne the brunt of the action in front, and that the II. Battalion was able to approach from the flank under fair cover; the enemy defended himself from house to house. I purposely cite these offensive actions from the pitched battle as representing actions with successful and unsuccessful issue, and simple village fights, because they show the possibility of advancing in the face of Chassepôt fire, provided the ground was utilized. I abstain from other quotations. The Chassepôt possessed the properties of the present small-caliber rifles, though not to the same extent. It approximated them in range, but was considerably inferior in power of penetration and flatness of trajectory. According to the present state of research, the wounds it inflicted at ranges from the muzzle up to 400 meters exhibited the severe effects of the small-caliber rifle without the corresponding beneficial effects which the latter possesses from that range to 2000 meters—*i. e.*, the wounds inflicted by it both at short and long range were severe, because it fired a lead bullet, which on striking the bone became much deformed and caused most severe splintering of bones and laceration and contusion of soft tissues. The fact that these things have been considerably remedied by the modern small-caliber rifle is due to the use of bullets cased in hard steel or nickel, which up-set but very little.* It thus was the hard lot of the Germans to fight against the (from the humane point of view) most detestable rifle that ever was used in war—a perfect fiend of a rifle, particularly at the ranges from 100—400 meters. They had a thorough taste of all kinds of its fire, and having preserved and handed down their experiences, the Germans would, in case of war, suffer far less surprise at the hands of the Lebel

*The latest projectile, the so-called "hollow bullet," besides other things, shows these same attributes.

rifle than may be in store for the French (knowing the effect of the needle-gun only) if they were confronted by an equal or superior rifle; for instance, our rifle model '88. This is another moral point with which officers and men should be made acquainted in the course of their instruction.

From what has been said, it may be assumed that, particularly in independent actions, it will be found possible to advance to close range (600 meters), in order to bring about the decision, and still closer by taking advantage of the ground, fog, or darkness. For meeting such conditions the troops should be well trained in those formations which are requisite and whose front and depth ever depend on the ground. At any rate, the difference between Chassepôt and Lebel is not so great for us as is that between needle-gun and rifle model '88 for the French. What the Germans accomplished against the Chassepôt is known; what the French are going to accomplish against the rifle model '88 remains to be seen.

The power of penetration of the small-caliber rifles is so great that trees no longer constitute good cover, unless they are very big, which is the exception, and in many respects it is the same with masonry. There is really not much left for the attacker to use as cover, and all the men should know that, not to mention the officers. The fire action will frequently take place between 1000 and 500 meters, and in view of the data given in the Firing Instructions, the greatest skill in the use of the spade becomes indispensable for infantry. In many cases the enemy's fire may make such work impossible, but, on the other hand, it may succeed, particularly in the frontal action. A bank of earth of 35 and 50 centimeters does not require much work where it is at all practicable. Trenches of that cross-section, extending for many kilometers, were "scraped" out by the Americans with great

rapidity. I use the term "scrape," for they were not supplied with our spade, but did the work with their hands, using their side-arms, their cooking utensils, etc., for, being practical soldiers, they knew how to help themselves. But the stupid "Michael"* nowhere becomes more conspicuous than when called upon for such work. To compel an active person to watch the clumsiness, slowness, indifference, and laziness of some German tribes in such work amounts to punishment, and, unless energetic steps are taken in these matters, they will exact heavy penalties. Nor would it do any harm if the officers would look upon this "scratching" with less sovereign contempt, and if they would learn more and accomplish more in that field—but, great heavens! everything that bears the slightest reference to that "unmilitary, plebeian work" is hateful, as though it were to be considered more military to be killed on a level plain than to save one's fighting power by "scratching."

The Instructions for Field Entrenchments of April 6, 1893, are based on similar grounds. It is laid down there in Section 1: "In the attack the entrenching tool may also be used to advantage for holding and strengthening conquered ground"; and in Section 45: "If the work has to be done under the enemy's fire, those men of the skirmish line who carry spades put down the rifle, construct cover for themselves, and then pass their spades." Not much could be gained by that procedure in an attack, yet enough "to preserve sufficient strength to repulse any counter-attack"; it may be possible later on, under favorable circumstances, to push these trenches to the front and thus to gain a much more effective firing-station. To be sure, military history

*"The German Michael" is a term used by the Germans themselves to characterize their own apathy and conservatism. "Michael" is supposed to be sleeping most of the time with a nightcap pulled over his ears.—*Translator*.

does not furnish an example of attacking infantry succeeding in entrenching itself under fire at close range, in holding out in that artificial firing-station, and in taking part in the subsequent assault. The most effective work in that respect was done by General Skobelev on the "Green Hills"; but the work was difficult, owing to the stony character of the ground; the infantry was not skilled in the work, and there was a deficiency of tools; the work required much time, the troops suffered great losses, were not supported, and had to withdraw. None of these difficulties is likely to be encountered in future, but it will nevertheless be difficult for the attacker to entrench himself under the enemy's fire. In the first place, there should be a strong second line in rear of the entrenching troops to prevent any interference with the work. I am nevertheless of the opinion that with sufficient skill and preparation and with good judgment an entrenched firing-line might have been established at the Mance ravine about 600 meters from the enemy, and the effect of such a line garnished with modern rifles would have been no small one, even if the attacking infantry were compelled to keep at a distance of 800 meters. Under such conditions the fire may be very effective against the skirmishers as well as against the enemy's artillery and reserves. Much, of course, will depend on the relative elevation of the opposing lines. It would be foolish to reject entrenching and long-range fire under such circumstances. The letter should not be permitted to kill the spirit, and I have stated above that it would be foolish to possess a long-range firearm without using it in that sense.

It is not my intention to give here detailed data on the results obtained from long-range fire, in so far as they might be established from German firing experiments. One fact I will mention. In France the question of long-range or

short-range fire is much more hotly debated than in Germany, where the maxim of long-range *and* short-range fire, according to circumstances, has been adopted long ago. In the summer of 1893, in an experimental firing at Grenoble, 50 hits were scored out of 300 shots at 2000 meters. Though but one-tenth of that result may be expected in war, still, if the fire were continued for some time, it might demonstrate how dangerous infantry may become to artillery at very great distances; the more as the above results cannot be called very good shooting. If this be accepted as indisputable, it constitutes one more proof of the soundness of my opinion, that the deployment of skirmishers along the entire front is necessary from the beginning in order to use our rifles against every suitable target, however briefly it may be visible. Whether or not fire should be opened at long ranges depends to a great extent on the manner in which the targets present themselves to the attacking infantry. The difficulty of firing with high sights is somewhat of an obstacle, to be sure, but in this direction the tactician may expect great improvements before long.

It is further laid down in the Firing Regulations that every shot may be expected to hit any target at 250 meters, a kneeling man at 350 meters, a kneeling file at 500 meters, and a standing file at 600 meters. This, in connection with the power of penetration and explosive effect of the bullet, both of which we have elucidated, seems to me to fix the limits (namely, 600 meters) to which it will ordinarily be possible to approach. We should remember that the ballistic qualities of our model '88 rifle surpass those of the needle-gun three or four times in every respect, and that the zone of destructive fire extends now to 600 meters, while that of the needle-gun was 200 meters.

The men are also expected to be proficient in estimat-

ing ranges up to 600 meters; greater stress is laid on the training in field firing, and the accuracy of the model '88 rifle has also been greatly increased, all of which seems to indicate that the fire-action will ordinarily be restricted to between 600 and 300 meters. Surgical investigations and ballistic experiments with small-caliber rifles—all, without a single exception—lead to the same conclusion, which is confirmed in every particular by the smokeless powder.

The Firing Regulations also say "that, looked at from the purely theoretical standpoint of ballistics, columns would be much more exposed at ranges greater than 1,000 meters" (than lines.—*Author.*). The Regulations do not draw that conclusion from the greater penetration of the bullet, but from the form of its trajectory, the angle of incidence, and from the dispersion. It would certainly be foolish to leave that question open in future and to say that these are peace experiments, are not results gained in war, and are of no, or of little, value. In 1870 the army did not have the benefit of all these private and official researches which we now have, and it is not to be expected that the authorities are making them known, and in the same breath renouncing their observance and consideration; nor do they do so, as appears from the spirit of the Firing and Drill Regulations! Moreover, these things are not mere "peace experiments"; on the contrary, the researches with the new rifle made in a scientifically empirical way have confirmed to a high degree what we experienced in 1870 at the hands of the Chassepôt, without at the time recognizing the causes, or gaining a satisfactory insight into the true inwardness of the ballistics of that rifle. It is thus the ground of war experience on which the present state of science, and consequently of tactics, has grown up "*post bellum.*" This is the state of things! For the study of small-arm ballistics

was not generally taken up until after 1870; it was based on the phenomena of that war, and the information thus gained has since been accruing to the benefit of tactics; it would be plain stupidity to possess information and to disregard it; it is on account of that very information that training, leading, and all scientific moral forces retain their value in applying the results of research to the tactics of the battle-field.

If, on the one hand, experiments (Firing Regulations, Regenspursky) ascertain that, at ranges greater than 1000 meters, columns will be more exposed; and if, on the other hand (Bruns., etc.), the same bullet will pierce two or three ranks at a range of 1200 meters, we can but draw the conclusion that, for this double reason, columns should not be used at smaller ranges than 1000 meters at any point where the enemy has a field of fire of that extent. Moreover, if the researches, on the one hand (Firing Regulations), teach that at 600 meters every shot may be expected to hit a standing file, and if, on the other hand (Bruns., etc.), it is shown that at ranges of 300 to 400 meters the same bullet will penetrate 3 to 4 ranks, and that at about 300 meters the wounds begin to be very severe, we may conclude from both conditions that columns are inapplicable at these ranges because trebling and quadrupling the losses. No data are available in this respect for ranges between 600 and 1000 meters, but it is safe to assume that they are similar, and that movements of columns and closed lines are things of the past at all ranges, and the better we take that to heart the less will be our disappointment. Within 1200 meters but one formation remains appropriate for movement, the single-rank, open lines; and it should also be the endeavor not to incur the disadvantages of the open column, since open lines, unless they follow each other opposite the intervals, are in fact nothing

but open columns with a considerable distance between ranks. It is not expected that these things can be done in war just as is demanded here; but every officer should be fully informed about them before going to war, and then he will at least try to help himself with sensible means as best he can. All difficulties cannot be removed in this way, nor should the military man strive for that, as it would no longer be war, but a mechanical arrangement governed by Regulations.

V. *Of the Extent of Ground in Battle, of Control, and of the "Treffen."*

No maxim established by experience is so much sinned against in peace as that applying to the extent of front of the various units. The peace exercises with units of comparatively low strength, and our detachment tactics assisted by the task system, minister to this evil, which, however, is common to all armies. This evil harbors grave dangers, since we do in war what we have practiced in peace, and if every leader, from that of the division down to that of the company, were accustomed in time of peace to extend his front according to circumstances—*i. e.*, "at pleasure"—to use the terrain as he pleases in order to escape a frontal action by means of turning movements, overlapping and outflanking, we could not be certain that the prescribed limits of front would be observed in pitched battle, that the troops would be at the spot where the leader wants to have them. The resulting conditions would be much like those at Gravelotte (right wing and center, etc.)—*i. e.*, there would be no development of front. But, in the pitched battle, the allotted spaces are the only conspicuous bounded posts for all troop-leading of the higher and lower kind; they should be strictly maintained in order that tactics may not be at the

mercy of boundless license. It follows as a simple logically tactical and judicial sequence that in such an event no leader can be held responsible for the accomplishment of his task.

Task, space, ground, and strength of troops are closely connected—*i. e.*, a battle order should invariably harmonize with the three last points; and leaders and troops should be practiced in fighting *straight to the front* within the assigned space, and in fully utilizing all existing cover. Lateral displacements may be made, but only within the limit of front of each unit, not within the space allotted to the whole force, or beyond. The evil resembles a disease; and the disease has sprung from fear of the frontal action. We must relearn, in the first place, how to fight the frontal action with masses; which is impossible unless the proper extent of front is observed, as otherwise all tactical landmarks, as regards space, distribution of troops, and the direction within that space, are wiped out.

The front of the brigade should never exceed 1400 meters except under urgent necessity—*i. e.*, when it is intended to outflank the enemy or make a turning movement; and since we are here concerned only with the pitched battle, such cases will be exceptional. It is not necessary to specify the maximum depth of the formation, because that depends chiefly on the ground, which varies greatly. Assuming a maximum distance of 250 meters between the supporting lines, the average depth of the formation of a brigade will be about 1200 meters; under certain circumstances it may be much less; all battle tactics have to reckon with that amount of front and depth.

The modern task system leads to non-observance of the limits of front and depth; the troops are thrown into the fight in dribblets, the tactical object is placed in jeopardy,

hence also the control of the action; the combination of these disadvantages may render the task system fatal, and, in the absence of prompt readiness for action, the system may be instrumental in preventing the desired tactical benefit from being derived from the initiative of the subordinate leaders. It will not always be practicable to evade all danger, but the most effective remedy no doubt lies in the control of brigade action.

In the formation by wings the regiment has a front of 700 meters, the battalion of 350 meters, 4 battalions being required from the beginning for the firing lines and supports, and two in reserve. This need not necessarily be so, however; it is merely one of the possible cases, but may be recommended for all frontal actions. Circumstances due to the ground, the object of the action, or the tactical object, may make a departure from the rule advisable, though it will probably be rare in serious frontal actions. A battalion may find it advisable to deploy at once an entire company as skirmishers covering its front, though it probably would ordinarily deploy a full platoon each from two or three companies; never from all four companies, because, aside from other objections, the initiative of the subordinates, which up to the assault manifests itself chiefly in the skillful use of the ground, would thereby be considerably restricted, if not rendered wholly impossible. Two or three companies will ordinarily be best, each company thus having a fighting front of 175 and 115 meters respectively. This space is somewhat large, but, for the sake of the initiative of the subordinate leaders, it is expressly insisted upon in the controlled system. With three companies we would have three open lines; the second and third lines would not be restricted as to distance (maximum, 250 meters), nor as to formation (open lines, small, closed, dou-

ble-rank column of files or sections), nor as to pace (walk, double time, rushes, stooping, creeping). In all of these things the subordinate leaders should be given full freedom and the battalion commanders should chiefly look to the observance of the allotted spaces and to the unity of action—not uniformity of means employed by their companies—and see that their companies do not transgress the limits assigned to the brigade. It is not necessary to state that there will be a limit even to these arrangements.

The means to be adopted for maintaining unity of action and for gaining the object of the action will vary with the ground. How the 4th company of each battalion is to be employed, whether in open line or in two or three lines with full distances, depends on circumstances and the question as to where the company is needed. The same may be said of the battalions in reserve, for the employment of which the tactical object is chiefly decisive. To give them the right start and to lead them is more difficult than under former tactics, but the steady forward movement is still characteristic of the attack; to be sure, not an uninterrupted advance, as formerly, for the final assault, but by many stages, successively, as illustrated by the beautiful example of Colonel von Wechmar (see Kunz, "The Action of Nuits"). However difficult it may be to combine an early development of a strong firing line, sufficient freedom for the subordinate leaders in utilizing the terrain, the subjection of the enemy to fire along his entire front, unity of action within the limits of the allotted space, and the support of the firing line from the rear by detachments suitably formed for delivering their fire and escaping that of the enemy (open line), still, this method would guarantee at least some degree of consideration for all these points. We thus would preserve the initiative of the subordinate lead-

ers and unity in the actual battle within the brigade; the control would lie with the superior leaders up to the moment of the final rush, and would not pass to the subordinate leaders until then.

I consider the mixing of platoons within the company, of companies within the battalion, and of battalions within the regiment, so self-evident and (to-day) so unimportant a matter that, although some attention must be paid to it, it can never be decisive. All men of the regiment should know how to fight within these limits, no matter where they stand or who commands them. In frontal actions it may happen that the brigades of one and perhaps of two divisions will have to fight on about the same ground; even then the mixing of several regiments should not interfere with unity of action. The chief consideration in every attack is a prompt development of the heaviest possible fire, or, in other words, the greater part of the unit should from the beginning be properly proportioned for that purpose, thrown into the fight, and kept in sufficient numerical strength for completing the action. To-day the firing line of the infantry is much in the same position as the first line of the cavalry. What the first line fails to accomplish will hardly be accomplished by the second or third; hence the first line should be made as strong as possible; for the decision of the infantry action rests to-day to a certain degree with the firing line; the stronger the latter, the better. Rifles not actively employed are useless; and the small-caliber rifle calls for a tactical use differing from that of the flintlock.

The statement that it is wrong and impracticable to assign to a company a front of 175 or 115 meters, because it would not admit of observation and control by one man, may be met by the reply, that since the introduction of

smokeless powder it does admit of sufficient observation, the ground also permitting, which was not the case formerly. In that respect, therefore, the small-caliber rifle is instrumental in enlarging the extent of ground for *subordinate* leading. As regards leading under fire, we should rather place our expectations too low than too high. According to my war experience, the term "leading" is justified only for the group; in so far as the latter is to do what is best at the time. Every larger unit will naturally get beyond the pale of its leader; he has no influence beyond his immediate vicinity. Coöperation of groups is practicable only through the coöperation of their leaders with platoon leaders; coöperation of the platoons is practicable only through coöperation of their leaders with the company leader; beyond which nothing is to be expected in the firing line. Every attack movement therefore requires in the first place efficient group and platoon leaders. It is not impossible that several platoons, abreast, may move together, if they have learned in peace how to do it and if front and direction are fixed for the particular case, which is not a difficult matter.

I believe, however, that these tactics will make it necessary to increase the extent of ground allowed for a brigade, and I have therefore assumed a front of 1400 meters, and that the ground allowed to a division will be somewhat diminished, while that of the army corps will remain as it now is—*i. e.*, 1400, 2100, 4000 meters. It is simply due to the absolute necessity of fighting in deep formation, to the great losses of the firing line, and to the endeavor to preserve the strongest possible frontal firing line.

How many of their own men did the company commanders have with them at the final rush on Fröschweiler, St. Privat, Loigny, notwithstanding the tactics then prevailing? Perhaps 10 or 12! All the rest belonged to other

companies. Why should we strive for something which experience has proven to be impracticable? Cohesion and coöperation are two different things. Organization by division, brigade, regiment, battalion, and company is needed for the deployment and forming for action; for the actual conflict we only need groups that can be led. They are restricted to the space of the regiment; their unit is the regiment; no formalities are required for closing them together, the sole consideration being the faculty to gain and exert sufficient power for the assault. This is regulated by the distribution of the leaders; the soldier obeys the nearest leader, no matter whether he knows him or not.

It is not necessary to point out the difficulty of preserving unity of action, because every case will require a particular method. The difficulty and difference lie chiefly in the variety of ground of a battle-field, and here lies the strongest objection to the so-called "normal attack." It will indeed be the exception when the leaders have acquired sufficient information of the ground, about to be entered upon by their units, by personal observations; still the information will enable the leaders to form a general idea and to give sufficiently clear orders to their subordinates. The enemy's action also increases the difficulties of unity of action, for it may bring surprises, as the conformation of the ground on which the action is to be fought sometimes does. The "finer work" in preserving unity of action therefore rests on the leaders of all grades below the brigade commander.

We are thus using a combination of the task system and of the unity-of-action system and fixing the maximum limits alone, in order to have the conditions requisite for the initiative within a space which is still quite considerable. Between the mere ditch and the steeply sloping hill, between the hedge and the dense wood, there may be a great

variance that will naturally affect the advance. The differences of elevation may be very great and the heights may be near together or far apart; obstacles and concealment of the most various kinds and unknown to the brigade commander will be found on the ground, and yet under the unity-of-action system it is one of the foremost duties of the initiative of the subordinate leaders to seize and utilize them. The formations for the movement which are to secure unity of action will therefore vary greatly, and in that respect absolute freedom should be conceded to the tactical judgment of the subordinate leaders. It is immaterial whether it will look well and whether it will result in a precise geometrical figure or not, so long as the irregularity of formation is adapted to the momentary tactical importance of the terrain. I use the term "momentary" intentionally, in order to make it understood, that for the various, sometimes very prolonged moments, corresponding measures are required from the same troops. Every tactician should ask himself, in the first place: Can I see?—*i. e.*, see a piece of ground as it ought to be seen by the tactician. A clever critic once characterized the art of painting of some great nation as defective, because the nation no longer knew how to see. The antagonism against unity of action springs perhaps from the fact that the terrain is too much looked upon as uniform and its level parts only are considered.

But the unity-of-action system should never go so far as to demand *uniformity* of formation. According to my observation, this uniformity has been developed by the task system to a degree that is inharmonious and was not contemplated by its former advocates, of which I am one. There are no definite prescriptions laid down; it is perhaps for that very reason that a normal system has been formu-

lated. I conclude therefrom that the subordinates are either not conceded the freedom required in the skirmish fight of masses, or that they do not know how to use it. Tactical individualization of the men is not sufficient; individualization of the leaders, particularly of the subordinate leaders, should be more cultivated than heretofore. It is also clear that when the brigade is formed by wings, as laid down in the Regulations, the wing should in turn be given that tactical freedom within the suggested maximum limits of space which the circumstances demand; never, however, neglecting to strive for the best coöperation permitted by the terrain. The movement will therefore take place in many different forms.

I am aware that my ideas on the extent of front will provoke a dispute, since therein lies the germ of everything that is of importance for the infantry attack. Some will say that the front is too extended and will reject the resulting "thin" skirmish line; the advantages and disadvantages of "thin" and "thick" skirmish lines will be further discussed; some will say that my suggestion promotes the mixing of units and that the celebrated "closing together" (*Zusammenschliessen*) is impracticable. I reply: That is theory grown gray, and I appeal to the judgment of men with war experience who have witnessed stubborn fire-actions.

In carrying out the action—i. e., in all stages from the opening of fire to the final rush—none but line formations are practicable, except in case of the reserve: there we do not reckon either with platoons, companies, or battalions; knowing that mixing of units is unavoidable, we should from the first make every preparation for fighting with mixed units, and by carrying this rule to its logical conclusion we shall learn how to control the disorder when everything is intermingled. This is the character of the horde system.

It calls, in the first place, for space—space for keeping the enemy's front busy and for concealment of the lines in rear; space for the freedom of subordinate leaders in utilizing the ground; space for passing from a "thin" to the "thick" skirmish line; in one word, for bringing up the supports before the final rush to the principal firing point.

This is best accomplished by using from the first deployed companies abreast of each other. To permit proper freedom in the attack, the companies should from the beginning have that extent of front which is assigned them in the subdivision of the brigade space. After that, we may take up the consideration of initiative in the method of advancing (creeping, rushing, double time, accelerated pace) and of the use of the ground; space is the prerequisite for the indispensable freedom of the subordinate leaders. If a different method be adopted or the front be diminished, the use of the ground will under certain circumstances be reduced to zero. How could utilization of the ground be expected, if there were no room for *permissible* lateral displacements? I have conceded that a company deployed as skirmishers cannot be controlled by one man. But all men and all leaders may be assigned a preliminary objective of attack toward which to work. The idea of having the skirmishers advance in a well-dressed line should be scouted. To enable the subordinate leaders to utilize the ground and the situation, there must be a difference of level in every line throughout the depth of the brigade; and some portions of it will be able to advance more rapidly than others. Nor will it be possible for one man to lead a whole platoon as by a string; its front is too extended for that; but it may be done with groups of not exceeding ten men, particularly when it is practiced rigorously in time of peace and when the leaders, from that of the company down to that of the group, keep

up some alignment on each other—like markers, as it were. More than this cannot be implied in the term “controlled” advance. It is necessary, however, that in peace exercises the flanks of the brigade be conspicuously marked.

The same freedom which I claim for the first (open) line must likewise be conceded to every line in rear. The latter may find it proper to change from the open line when circumstances make it advisable. Within certain limits it should also be permissible to accelerate the movement temporarily and to make the line denser in order to quickly seize favorable points in front, without regard to the alignment of the whole line; I am convinced that every maneuver offers opportunities for demonstrating the practicability of this method of attack.

Assuming the front of a brigade formed by wings (*i. e.*, the two regiments side by side.—*Tr.*) as 1400 meters in round numbers, and limiting the maximum distances between lines to 250 meters, the depth of the formation would be 750 meters. Adding to this 600 meters as the distance from the enemy, the total depth of ground would be 1350 meters, which is not too great for the brigade commander to keep under observation.

Again, we should have the right idea of the so-called leading on the part of subordinate leaders. What we see in time of peace will in most cases be found impracticable in war. When black powder was in use, it sometimes happened that the influence of the subordinate leaders was restricted to the men in their immediate neighborhood; smokeless powder has brought an improvement in that respect, but the best guarantee for the leading is not to be found in the mechanical delimitation of the distances; it rests in the tactical education and training of the subordinate leaders and of the men; and particularly in a courageous though pru-

dent advance with strict mutual attention of leaders and men. In the first place, the development of strong skirmish lines from the start makes it possible to take the defender's entire front under fire, and not only will the assailant produce a greater effect from the beginning, but when companies and battalions become mixed, a certain degree of evenness in the distribution of the leaders along the entire firing line can be arranged from the rear. Without such a distribution of the leaders—not according to units, to which they belong, but according to tactical requirements—no superiority of fire will ever be gained. We cannot dispense with this disposition of the subordinate leaders, and it cannot be arranged except from the rear and with the help of an advance of fresh troops.

The case will indeed be rare when all four brigades of the army corps will be ranged side by side with a front of 1400 meters for each. These limits become somewhat diminished inasmuch as the divisional command becomes to a certain degree a regulator within the army corps. As a general rule, 2100 meters would be assumed for the division, including its artillery; on the flanks the front will probably become extended, but we cannot give figures here; the force of circumstances decides all that; but the extension of the front should be a limited one, and an army corps should not occupy more than 4000 meters.

In fixing the space for it, a company is assumed to number 200 rifles in round numbers. It will thus find many opportunities for exercising a freedom in the use of ground, but above all, the relatively large front makes it possible for the supports to follow opposite the gaps where they are later on to come into action; this is very important.

We recommend 250 meters as the maximum distance

for the supporting lines; it may be possible, however, to shorten the distance, which would be the duty of the leaders of the lines, and to relinquish the single-rank, open line, where the ground permits. Since the distances for close-range fire between the opponents has become much greater, and lies ordinarily between 600 and 300 meters, and since, on the other hand, the firing line has derived increased powers of resistance from the improvements of arms and the greater effect of artillery, the maximum limit of 250 meters cannot endanger the promptness of support from the lines in rear. Good troops are not going to run when a counter-attack develops; by the time the counter-attack does take place, we may be sure the foremost supporting lines will be up before the distance between the hostile parties has been reduced to 300 meters; in most cases the second line of supports would arrive in good time, and sometimes the third.

The real difficulties begin at 600 meters from the enemy's skirmish line. The principal work will then have to be left to the subordinate leaders, the superior leaders attending chiefly to the employment of the reserve. The latter may be held as far as 500 meters in rear of the rearmost line of supports. In the course of the action it may be brought up closer, but only by order of the brigade commander, and when advancing to the decisive assault it should traverse the distance without halt and in suitable formation, as did Starkloff's Würtemberg Brigade at Fröschweiler.

The demand for such development is based on three grounds: 1, in order to have the enemy's entire front under fire from the beginning; 2, in order to fix the direction of the attack beyond doubt; 3, in order to bring up supports, insert them in the front, and redistribute the leaders in the most natural way, which will, as a rule, be straight to the front. The

open formation and great distances are necessary on account of the low trajectory and great penetration of the bullets. It may not always be possible to prevent two men from being directly in rear of each other somewhere in the space of 1350 meters, but in most places there will be but one man as a target. - On large battle-fields and within the depth of formation assumed, much cover will be found that will have to be utilized, although it will not guard the lines in rear from all loss; but who would expect that? This fighting with great depth of formation has the further great advantage, that the individual lines may be developed for action, undisturbed, beyond the great danger zone and in the order best suited for their subsequent employment. No other method permits of this, least of all the ravine theory. Unless the fire-front is from the beginning equal in extent to that of the enemy, a successful opening of fire and promoting it to superiority of fire are impossible. These reasons combined call imperatively for a full development of front from the beginning. This method, moreover, safeguards to the brigade commander an indispensable control in action without depriving the subordinate leaders of the freedom to take their detachments farther to the front under certain circumstances—*i. e.*, without depriving them of their initiative.

It is unavoidable that the firing line when halted should be more open in some places than in others, but by no other means than those stated can the entire front of the enemy be continuously and early brought under fire. The single-rank, open line is therefore to be the formation for movement as well as for fire, whenever other forms are inapplicable. Unity of action would thus be preserved, and it should be preserved, at least until the several subordinate leaders make their initiative more and more felt from the first firing-point, which will ordinarily be 600 meters from the enemy,

and until the brigade commander in turn makes preparation for the decisive moment by correctly timing the advance of the reserve.

It is not to be denied that advancing in such open lines has its disadvantages, but they may be minimized by making the swarms within each platoon as small as possible, not to exceed 10 men, and by training subordinate leaders and men to advance straight to the front without stop, so as to preserve the general direction by means of unremitting attention and mutual intelligent coöperation. The further disadvantage of the mixing of units of different battalions (reserve included) should not deter us. It may be somewhat diminished by a suitable deployment, depending on circumstances, but beyond that the men of the same regiment should have no difficulty in fighting although completely mixed from the first firing-station to the principal station. Every man is to obey the nearest leader; these leaders are not restricted to certain places or troops; they should distribute themselves around, should mutually observe one another, and see to it that the thread between the men and their leaders does not break. Such training will moreover lay the foundation for the subsequently indispensable spontaneous action of the subordinate leaders.

There would be some danger in this method of advancing over long distances, if the advance were made by rushes. The number of skulkers—*i. e.*, of rifles lost—might become considerable; hence it is sound to remain as long in motion as possible, and not to make the first halt farther than 600 meters from the enemy as a rule.

What has been stated suffices to show that the preponderance gained by the defense from a previously occupied, selected, and specially prepared position vindicates Clausewitz, who has been subject to much attack on that

point. It is nevertheless necessary to add the tactical to the strategical offensive in order to conquer the enemy.

"An attack pushed home with determination will *always* succeed," say the Regulations.

This cannot mean the attacks of single isolated companies and battalions under favorable circumstances; such, for instance, as covered approach as far as the enemy's position or concealment by fog, II. and F.—57th at La Garionnière January 7, 1871; I., II.—57th at Beaune on the afternoon of November 28th; II.—56th at La Tuilérie on the evening,* or the numerous attacks on advanced posts; the context indicates that the attack of large units—*i. e.*, of brigades—in the pitched battle is meant. In that case control is all the more necessary, because without it an attack cannot be "carried forward with determination." Since we were unacquainted with any "suitable method of control" in 1870-71, many attacks failed (Wörth, front; Mance ravine).

At Spicheren the attack was carried to the enemy's line at several points by companies and platoons, which were fighting a kind of soldiers' battle; they labored for hours through the cut-up ground with great perseverance and disregard, and gained the victory by their superior *morale*. Nor is this controverted by General François' attack, because, after it once started, it also degenerated gradually into a soldiers' battle, the general succeeding in getting but one battalion to the spot where he wanted his whole brigade. We might also quote some very fine attacks of fresh brigades in the pitched battle; for instance, the attack of Starkloff's Württemberg Brigade on Fröschweiler

*The prevailing account of the capture of La Tuilérie is incorrect. The position was actually captured by 3d and 4th—17th. It was only after its capture that Captain Montbard arrived with II.—56th and informed the leaders of 3d and 4th—17th, First Lieutenant Casimir and Captain von Reichenau, that "his orders were to relieve these troops."

(Wörth, August 6th), that of the 33d Brigade on Loigny, etc. (December 2, 1870), and of the Saxons against Ste. Marie and St. Privat (north) on the 18th of August. Here also belongs the attack of the 3d Division on the second day of Villiers, of the 38th Brigade at Mars-la-Tour, and that of Colonel von Wechmar at Nuits.

The statement is therefore fully justified, since any troops may be called on for such service; hence the will to close with the enemy should be developed in every individual soldier by peace training, and the same thing is necessary for various onslaughts in the course of a battle. Wherever the attack succeeded, the brigades had developed their full fronts from the beginning (Wörth, XI. Army Corps, Starkloff's Brigade; Ste. Marie, St. Privat (north), Loigny). Wherever the attack failed the ravine theory (VIII., VII., II. Army Corps) prevented deployment or the troops were employed on the modern task system (IX. Corps). It may be assumed that in future as many attacks will be unsuccessful as have been in the past; hence the following should also be demanded: "When the attack fails to reach the enemy at once, it is the duty of leaders and men to hold the ground gained, and as long as the troops have ammunition they should, in such situations, successfully repulse the enemy's attacks." Unless the attack is made contrary to tactical requirements as regards time, objective, and strength, the foregoing may justly be required of all troops, as illustrated by many of the examples from 1870.

In Sections 96 and 130, Part I. of the Reprint of 1889,* it is stated that at ranges of 900 and 1000 meters fire may be opened on columns and on artillery; and in Section 130: "At long distances it may happen that the objective will be

*Infantry Drill Regulations.—*Translator.*

visible only by the use of glasses, and not at all to the skirmishers themselves. The latter should in that case be directed to aim at certain points of the terrain."

It is further stated in Section 133: "In the course of the action a full direction of the fire will frequently be impossible. To meet that condition skirmishers should have the rule impressed on them in their peace training, that in the absence of fire direction all objects within 600 meters may be fired at, between 600 and 1000 meters only high and broad targets, and that, as a rule, firing beyond 1000 meters is prohibited."

The notions of close ranges have been much modified of late. With the needle-gun short range was 250 paces; with the Mauser '71, 84—400 meters; and with the rifle model '88—as with all small-caliber rifles—it is 600 meters. None will deny the effects of long-range fire; on the other hand, every one will be fully justified in ever pointing to the disadvantages of long-range fire (over 1000 meters), which consist in this, that the visual power is too small to permit good aim, and that the long-range fire, particularly with the modern multiloader, will lead to waste of ammunition; against the latter none of the nice expedients adopted in peace is of avail. In connection with the flatter trajectory it may be mentioned that the swept zone is diminished if the elevation of the firer and that of the ground he is to sweep is not the same.*

On that account it is perfectly correct for the Regulations to prescribe "that in the course of the action a full direction of the fire will frequently be impossible, and that the soldier is not to fire over 1000 meters."

The controversy over long-range and short-range fire,

*For details, see "Lettres d'un cavalier," February, March, April, 1893, of the *Revue de Cavalerie*.

however, will never cease, nor will the employment of either method of fire. Much might be advanced *pro* and *con*. In consequence of my experiences in war I am an advocate of short-range fire, and there are probably not many who have had more experience in action. In the case of well-trained and well-disciplined troops I would invariably—and particularly on the defensive—decide for short-range fire; an opponent who is compelled to retreat under short-range fire is no longer to be feared. It is sure death for him. I had to undergo that trial myself. If any one were to seek for an instance of short-range fire, he could find a perfect type at Beaune la Rolande,* and I doubt whether the Imperial French Army could show anything superior in the way of long-range fire. To-day troops should be able to fight and to fire in all zones of fire. Any one who will reflect and ascertain by actual trial what it means to designate certain points in the terrain will find, in 90 cases out of 100, that unless these points in the terrain are farmsteads or something similar, they cannot be found or successfully taken under fire.

The cause of the obstinacy observable on both sides in all actions in 1870-71 lay in the method of fighting, itself the result of improved fire-arms, and no material change in this respect will result from smokeless powder and small-caliber arms. An attack can no longer be made as formerly by flinging the brigades into the fight in order to rapidly win the decision at the point of the bayonet. The small-caliber rifles make swarm tactics with skirmish fire the universal method of fighting. The proficiency of the individual soldier in skirmishing thus gains in importance and the course of a battle will consist of a series of swarm

*Compare Hönig's "The National War on the Loire," II, Chapter V.

attacks more frequently than in 1870-71. On that account the control of the action should firmly rest in the hand of the brigade commander. These attacks admit of ready explanation. Both opponents fire at each other; the one believing himself in the superiority advances, and either succeeds or fails. In the former case the repulsed party redoubles its efforts, for that onslaught is not decisive; it merely confers a tactical advantage. When the repulsed party feels itself strong enough to push the enemy back, it advances and perhaps drives the opposing swarms back. The latter fall back until assisted, either by the ground or by troops in rear, or by both, to put a stop to the enemy's successful onslaught. The enemy is now brought to a stop at least; sometimes he may face about, for he will not always be able to hold out under greatly superior fire. At that moment the party which so far has been driven back resumes the offensive and regains the tactical superiority. This is the course of the modern action, this is the "surging to and fro," which is so apt to confuse the heads of those who have never beheld it. The number of such rushes made on either side may vary greatly, and will depend chiefly on the use made of the troops in rear and on how frequently the swarm line gains new strength from the accession of fresh troops. Hence the importance of the disposition of the rearward lines, their distance, number, and employment, and the necessity of great care in dividing them, holding them in readiness, and bringing them to the front. That problem cannot be eliminated by smokeless powder, but it may be modified, and in many cases it may be made more difficult. The future action will be a skirmish fight consisting of rushes; it will show a certain variableness, a continuous displacement of the opposing lines, and the variableness will be characterized by great persistence. It has its cause in human nature,

which is excited by the fire so that men feel inclined to withdraw themselves from its effect. There will ever be cases where a strong and determined rush will secure permanent possession of the captured position from the beginning to the end of the battle and against which the enemy's attacks are shattered; but, as a rule, the decision will be brought about gradually by a number of rushes, by gain and loss of ground, and that side will be best assured of success which provides a superiority of force for these rushes. The superior leader alone can see, observe, judge, and calculate all this. This character of the action will not be denied, however unsympathetic it may be to some, and if we keep it before our mind, we shall make few or no mistakes in the choice of our tactical means. This fighting method, inseparable as it is from the small-caliber rifle, should not be inveighed against because it "is not decisive," is "difficult to watch," and "still more difficult to control." To be sure, the rush of a swarm decides nothing, but what enormous fighting power did we not repeatedly observe in swarms of skirmishers, which, though for six or eight hours engaged in the materially and morally destructive fire action of highest tension, yet ultimately rushed the key of the enemy's position! Where has there ever been in tactics such a fighting power! These are some additional reasons why I remain opposed to any normal attack!

In connection with the character of the conflict and its duration I wish to recur to the question of ammunition. The more rapidly the man fires, the more quickly will he expend his ammunition. This rapid fire, which has been reintroduced by the Reprint of 1889 in place of magazine fire, disturbs me, and, in view of the properties of the modern rifle, I deem it necessary to definitely discard it. That word should not be given space in the Regulations; on

the contrary, on every page we should find the words "economize your fire." When the man is trained in rapid firing, there is danger of his making freer use of it than if he had never known it. Rapid fire was proper with a rifle where the time for accurate firing was limited to about one minute; but to-day, when the fire is such that its accuracy is permanent within 600 meters it does more harm than good, because leading to a waste of ammunition. Experience has moreover taught me that the greater the danger, the more unsteady will the soldier become and the more rapid his fire. Why then have rapid fire laid down in the Regulations? Instead of rapidity of fire, I want economy of fire.

A few words about "*Treffen*." In discussing the execution of the combat I have declared myself against their retention and mentioned open lines alone in that connection. Still we cannot dispense with "*Treffen*" for the deployment, for forming for attack, and in all tactical problems where a surprise, a sudden attack under cover of fog, of favorable ground, and of darkness is contemplated. We should therefore know how to move in "*Treffen*" and, if necessary, to fight in them. On level ground 1200 meters from the enemy the swarm should be the usual and only formation of the "*Treffen*," though, depending on circumstances of terrain and battle, line and column may also be used. This matter and the distances between lines are the most important questions and have therefore been thoroughly discussed. Maximum distances and maximum fronts alone should be laid down; never normal distances and normal fronts.

Any fear lest the rearward lines be too late for the attack or for the rescue in case of defeat should be obviated by a strong firing line; the distances are not so much determined by the element of time as by the range and flat trajectory of the rifle. At the time when the latter had the

same effect at 200 meters that they now have at 600 meters, the lines were ranged at correspondingly closer distances. It follows logically that to-day they should follow farther apart.

As regards number and strength of the lines, it may be stated that they should be so constituted as to be able (*a*) to gain the superiority of fire at the range of about 600 to 300 meters, and, (*b*) reinforced by fresh troops, to deliver their blow, which owing to the considerable distance, is likely to take the form of a threat rather than of actual assault. Here lies the problem in the assault. It will, as a rule, be impossible for the firing line to approach closer; and, on the other hand, muscles and lungs are unequal to crossing the space in one rush; hence the position will be found evacuated by the enemy and the act of its capture will merely consist in stepping into it. In this connection I would again refer to Elsasshausen and Fröschweiler, as instructive examples, and also in part to St. Privat. They may be taken as types for the future in so far as we may speak of types.

VI. Of the Defense.

There is a saying that troops who know how to attack will also defend themselves well. This is confirmed in many respects by history; but it does not show many instances where troops good in defense were also good in attack. For this reason our previous expositions have treated of the attack alone, but it seems necessary to me to point out some features as regards leading, which will inure to the benefit of the defense more than heretofore.

In the first place, in regard to the leading of armies, it is quite likely that in future several armies simultaneously operating on different theaters will have to accomplish dif-

ferent objects. Situations may occur where the temporary and permanent strategic and tactical defensive rôle may have to be assumed. In the war against the republic in 1870 the Germans took the strategic and tactical offensive within certain limits; yet there were two cases where the armies were forced on the strategic and tactical defensive, and fought resolutely in both.

I mean the II. Army with the Army Detachment (army of the Grand Duke of Mecklenburg.—*Tr.*) on the Loire at the end of November 1870, and Werder on the Lisaine in the middle of January, as his corps is to be considered an army for our purposes.

In both cases the defender passed subsequently to the strategical and tactical offensive in the sense of combined operations of two armies; and notwithstanding certain errors in the execution, the defender successfully solved on each of two theaters, and in widely different ways, a problem which is rightly considered most difficult, and in each case with great results, in one case even destroying the hostile army.

I believe that such things will recur in a more marked degree; I believe that the war of the future will closely approach the "position war" with all its peculiarities and drawbacks. To this we have to reconcile ourselves, whether we are pleased or not; for it lies in the nature of future war, in consequence of the remarkable rôle which technique—and under that heading the improved arms are to be classed—is destined to play. Hence both the general and his troops should be familiar with all means of defense.

Cases are likely to happen where the general, though recognizing the general direction of the operations (end of November, 1870), will have great difficulty in ascertaining promptly where the attacker's main body is and where the attacker means to deliver his main blow. There is but one

means for meeting him promptly—namely, concentration and prepared positions on the line of the probable direction of the operations. The II. Army recognized the latter somewhat late, prompt but insufficient measures were taken for concentration, and nothing whatever was done to make a good selection for the probable battle-ground and to strengthen the same promptly.

General von Werder, although rather taken unawares by the enemy's operations, succeeded in concentrating everything for the defense, in promptly occupying the position (selection of the battle-field), and in preparing the same in so far as permitted by the very troublesome winter season.

It certainly would have been in keeping with both these defensive tasks to devote particular attention to the left flank on the Loire and to the right flank on the Lisaine; it was neglected in both cases, though the strategic situation plainly showed the necessity therefor. It follows that correct strategical understanding is requisite for the selection of the space and of the points within that space where the defender means to accept battle—*i. e.*, strategic laws determine the selection of the ground and the extent of the position (product of troops and distance).

The leader of the army will also be cognizant of the line to the rear of which he must not permit the operations to pass. That line depends on the object to be covered by his operations and on the distance of his general line of reconnaissance from that of the enemy, who may withdraw his line sooner or later. A proper selection of the position should not, as a rule, be difficult, provided the connection of the strategy in the particular case with the general situation is properly understood; it will thus be possible to determine in a general way the points where works should be promptly planned and constructed.

The worst thing, for instance, that could have happened to General von Werder was to be pushed back in the angle Belfort—Switzerland. That strategic consideration should have overruled all others; hence the right flank should have been made strongest and the reserve should have been posted as near it as possible.

The worst thing that could have happened to the X. Corps at Beaune was to be cut off from the II. Army and to be pushed in a northeasterly direction. The maintenance of the touch with the II. Army should have been the decisive consideration in the selection and fortification of the position, and hence the right wing should have been made specially strong. These are but two situations, but the defender will, as a rule, be able to determine the point where he means to meet the attacker long in advance, and to begin the preparation of the position according to strategic considerations alone. The rest—the completion of the position—can be done later. It is not necessary to construct a regular fortress; it is only necessary to securely hold important points with small numbers, in order to have sufficient forces available for other points and objects which might be of an offensive character. In most cases it will be possible to have a skeleton promptly designed and constructed which in itself may confer a tactical advantage, as at Gravelotte and on the Lisaine.

In order to promptly reach the position (occupation of the position and setting apart a force for other service), the troops should be kept assembled at their stations, which may be done without danger if the cavalry, in combination with other arms attached to it, reconnoiters and guards the front and flanks.

To enable him to see ahead and to follow the events from their beginning, the defender should be especially

strong in enterprising and suitably armed cavalry with artillery. Without it any defensive undertaking will in future be highly jeopardized.

It is therefore the function of the army leader to determine the general outline of the position. He is best informed, has familiarized himself with the task before him, is best able to fix upon the points of support on which the framework is to be erected, but he should know the ground not merely from the map, but from inspection. The latter may not always be possible. As the matter passes from the army commander to his inferiors of the several grades, the details of construction gain more and more in precision, dependent on subsequent information received; the road leads from the whole to the details, from large considerations to smaller ones.

It follows that the authorities of the various grades and arms, particularly the officers charged with the trace of the works, should have a full understanding of the strategic aspect of the problem—*i. e.*, that they should be aware of the object and grasp it in all its details; and that within the outlines determined by the superiors all tactical advantages should be turned into account. Barring some exceptions, marked feats in both of the foregoing respects have been rare, but instead of complaining and instead of anticipating nothing better in future, the inseparability of strategy and tactics should be kept in mind, which, considered from the ideal point of view, blend on the battle-field (position) in every essential aspect. When we are accustomed thus to think, to reflect, to observe, then the works will rarely be constructed at the wrong points and the prejudice against them will vanish because no one can deny their effect. We had not learned to think thus; imagination was lacking; the fault was that the education of the young does not address itself to the nerve of all intelligent

mental work; it fails first to formulate an idea, a conception of what is to be accomplished. We cannot dispense with book knowledge, but not every one need be a scientist.

The defender sometimes succeeds in deceiving the enemy, as evidenced by the great examples of Königgrätz, Gravelotte—St. Privat, and the Lisaine. In the last two named cases the extent of the front was greatly underestimated, and in the first case a proper idea of the strength of the defender and the trace of his position was lacking. In the execution of the same idea, Frenchmen, Germans, Austrians, unintentionally, caused the enemy a good deal of uncertainty; success followed in but one case, that of the Germans on the Lisaine. The Austrians ultimately fought in front of their position, and succumbed chiefly on that account and because the position was not occupied and did not remain occupied as ordered. We also note there the harmful influence that may be exercised by an advanced position (Maslowed wood). Although the Germans were greatly mistaken as to the extent of the position, the French were nevertheless defeated, because the strategic flank was in the air and was crushed—crushed all the more easily because not artificially strengthened, thus rendering all the other works which should have begun at St. Privat of no value. The facts show, however, that the defense was not complete, because at Königgrätz, as well as at Gravelotte, a great leader was lacking. In both cases we observe the same objectionable feature. At Königgrätz the left is posted at Popowitz; at Gravelotte, the right at Verneville. Both were the strategic flanks, and it was only due to the efforts of the corps commanders that the better positions of Probus and St. Privat were occupied!

Thus, even before the introduction of smokeless powder, the defense was in possession of certain features difficult

to reconnoiter and greatly embarrassing the assailant, and it may be admitted that they constituted part of the strength of the defense. I advocate the offensive, notwithstanding the fact that smokeless powder brings the effect of that strength of the defensive—*i. e.*, the uncertainty in which it is able to keep the assailant—home to the latter much more severely; but the favorable aspects of the defense should not on that account be undervalued.

The defender can determine the general trace of his position by the map, and the assailant may likewise infer that trace or the range in a general way from strategic considerations. Events may happen, however, which are contrary to the spirit of strategy, as, for instance, Bazaine's withdrawal into the position of August 18th, which had first been selected by map and was given its real shape subsequently after an inspection of the ground.

The assailant's uncertainty could even in those days be very great, depending on whether right or wrong strategic conceptions prevailed in both camps; smokeless powder, however, renders it much more difficult for the assailant to promptly make out the defender's position even in case he has hit upon the enemy's strategic line of retreat.

The great range of modern rifles and artillery projectiles, taken in connection with the absence of smoke, makes it difficult to locate the enemy. The weaker opponent will usually be compelled to resort to the defensive and entrench himself; but the defender is able to-day to greatly increase the assailant's uncertainty, to force him to delay while employing means to deceive him, and to employ his own counter-measures in such a way as to secure the numerical superiority at a certain point notwithstanding his general numerical inferiority.

Advanced positions are good means to this end, and a consideration of the battle of Gravelotte will show what great advantages they are apt to confer on the defense to-day, and which we will leave to the reader to determine, because military history is used by different people to prove different things. It is my opinion that it is smokeless powder alone that in great battles will enable the commander-in-chief of the defense to promptly take his measures while his ideas are still of but a general character, because smokeless powder gives him an amount of time not formerly possessed, should he contemplate a tactical counter-offensive. In that case time is gained by the use of advanced positions, and it may be ascertained by calculating the ratio of the breadth and depth of the line of defense to the depth of ground commanded by the advanced positions up to the line of defense. This, combined with reconnaissance, I deem the principal modification introduced in grand tactics by smokeless powder, and also the chief advantage which the commander-in-chief of the defense may derive from it.

Lack of space and other reasons prevent me from going into details of results to both defender and assailant. I wish to point out, however, the opinion of the French Colonel Langlois, who approves of the advanced positions 7—8 kilometers in front of the main position, and refer the reader to Nos. 17, 18, 28, 58, 59, and 60 of the *Militär Wochenblatt* of 1893. While I concur in general in the ideas expressed in the last three numbers of that periodical, I think that a vigorous counter-offensive should be the first consideration in selecting the main position, and that advanced positions cannot then be dispensed with. Skill is required in selecting and utilizing advanced positions and in promptly rendering them harmless by a vigorous method of attack. The strug-

gle for them may at the same time sufficiently disclose the main position, if they are about 1000 meters in front of the latter; the farther they are to the front the more are they apt to mislead the assailant, and the greater would be the benefit derived from them by the commander-in-chief of the defense. It is unnecessary here to quote unfavorable instances from Königgrätz, etc., or to point out that the French derived little advantage from their advanced positions on the 18th of August. We are simply face to face with an important question, which it is necessary to decide before committing ourselves to battle; and I believe that maneuvers might be so arranged as to be of great benefit in this respect. In this way we would be more apt to select the right means for defense and attack; which must be found, for I do not believe that any defender harboring great designs would relinquish the advantages offered by advanced positions.

The main circumstance of benefit to the defender and deceiving the assailant is the latter's uncertainty, which will cause him much delay. On that account it is not unlikely that several deployments of the army and of the battle units of the assailant may become necessary; for grand tactics to-day confer on the defender the power to keep his armies separated at distances and in combinations suitable for the offensive employment of one of the armies, depending on the amount of information and time gained by the struggles, etc., for the advanced positions. Not only should the selection of the main position be considered from that point of view, but also the relation of the advanced positions to the main position and the strengthening of the latter; if it results in a Plevna, it will have to be invested; if in a Gravelotte, it will have to be attacked, as heretofore. The only technical-tactical point to be considered is that the advanced

positions should no longer consist of farmsteads and villages, but should be located in the general terrain and as inconspicuous as possible; woods may prove very useful for that purpose. When deciding on the use of advanced positions, it will be necessary to extend the front as much as possible and to give it an irregular shape, wherein the improved arms will be found of great assistance and will much enhance the effect.

Section 13 of the Field Entrenchment Regulations states: "The preparation and occupation of advanced positions is not to be recommended as a rule, because it may easily lead to the defeat of the advanced troops and mask the fire from the main position. It is therefore better to concentrate all available means for the fortification of a *single* line." I might concur in the preparation, but not in the occupation. To be sure I am assuming here that the army will be boldly led and that small technical-tactical considerations and inconveniences will have to give way.

It may generally be said that the defensive is the stronger; but it rarely matures great results, unless they are brought about by other means (Manteuffel-Werder); for so has it ever been and will ever be. Wörth, Gravelotte (we purposely quote only field battles where both sides had full room for development), Beaune, Loigny, Lisaine, St. Quentin, etc., all point to the strength of the defensive. In case of an equality of arms the relations between attack and defense may at best be slightly shifted, and it is advisable to adhere to the attack, not, however, without always striving for early and strong development of fire and for the greatest possible numerical superiority. The long-range arms confer many advantages on the assailant; he has greater freedom of movement than the defender; he can develop a greater fire effect, though at first by progressive stages only;

to-day he can take the rearward positions of the enemy by fire action much sooner than formerly, because the arms carry farther. He has, above all things, greater freedom of decision. The attack will be more difficult to initiate and to carry through; it will require more time; and, in some places, it will entail greater losses, which result must be accepted; but when crowned by success, it will mature results never before dreamed of.

It will not be often that the defender's position will fulfill all requirements; he will have to concentrate his troops at various points; if the defender wishes to escape sensible losses from artillery fire from the beginning, his position to-day should be like a great artificial enclosure protecting the troops, which would never accord with simplicity and rarely with troop-leading. The defender will be compelled to remain much longer in a condition of readiness, which is not calculated to increase the *morale*; and in order to protect his artillery he will have to deploy a large part of his infantry on the slope toward the enemy, in most cases without cover. He will concentrate the full force of his fire on certain points, but at the point or points of attack the assailant will be able to develop a superior fire, particularly if he succeeds in promptly locating the enemy's flanks. The defender will, in many cases, have to shun farmsteads and villages, and construct trenches in a comparatively short time, which, while useful for purposes of concealment, permit at the same time of greater fire-effect. Recently the plow has been the subject of frequent experiments in the construction of hasty entrenchments; and in France, in 1893, General Morin, in particular, is said to have been very successful with it. I have omitted technical details, as to-day there is no appreciable difference to be found in the French, German, Austrian, and Russian regulations regard-

ing the value, design and construction of field entrenchments; and it could not be otherwise; the same ballistic qualities of the arms were bound to lead to the same conclusions in field fortification. On that account heavy calibers will be brought in the field by both sides. Thus it was stated in the French Instructions of March 23, 1878: "Field entrenchments have at all times been of great importance; since the introduction of the rapid-firing arms they have become a power and an expedient on the battle-field which is always useful and frequently indispensable. They permit the defender to make up for his numerical inferiority at certain points, and enable the assailant to destroy the former's defensive positions or to turn them against him. They also enable one to entrench on captured ground and thus to hold it."

All investigations, in whatever direction made, point toward position warfare, though, on account of the great warlike energy of the spirit of the times, its course will be different from what it was in the past. Rifle and spade, regulations for fire and field entrenchments (field pioneer regulations for the infantry), to-day form the component parts of one and the same means, the greatest possible development of fire. It is in fact the culmination of the entire fighting act! I deem it probable that the selection of suitable covered positions of the local and general reserves will prove one of the most difficult problems of the defender, especially if he intends to pass from the defensive to the offensive. In future the reserves will unavoidably be more exposed to danger than formerly. They will sometimes suffer very much from echelon shrapnel fire, and it may be accepted that the former manner of massing reserves and of bringing them up to the main position are no longer applicable. But to be able to pass to the offensive in

order to gain the victory, it is necessary to hold masses in readiness in the vicinity of the line of direction the offensive is to take; and the undoubtedly impending great expenditure of ammunition, not to mention losses, will compel the defender to have local reserves all along the rear of his line of battle if he wishes to exert his full fire power. In prepared positions both requirements may be more or less met by artificial cover; in other cases not at all, or but rarely. We concede that, particularly at the opening of the battle, the defender will usually be able to develop a greater fire power than the assailant, but whatever may be the extent of ground covered by his movements and measures, the defender will be cramped by the law imposed on him by the assailant, who, having more freedom, can paralyze the fire and ultimately exceed it, though it may require more time and entail greater losses at some points; but the ultimate prize of victory will be all the greater.

VII. Of Reconnaissance and of Preparation by Artillery.

It is odd that so much should have been written about losses suffered and to be suffered in future, and how they might be avoided, without ever getting at the root of the evil. For two decades we have been on the wrong trail; we have been circling around the "guiding motive" at greater or less distances; we have done much that is bound to lead to effeminate ideas; we have looked for the causes where they do not exist, and we have not looked for them where they are. In this way we have deceived ourselves in order to spare others, and we have likewise deceived those who do not know war from personal experience, and those whose positions forbid them to see anything outside of their own troops, for the same purpose of sparing others! Instead of admitting outright that 90 per cent of the causes of our losses in 1870-71 are to be found in the perfunctory character

of the drill-ground in time of peace; in our defective training and in our lack of knowledge of the enemy's army; in the tactics and in the incapacity of numerous leaders of various grades; and instead of making a thorough investigation of the causes, we have attributed the losses to the positions, to the terrain, to the ballistics of the rifle, etc.; we have failed, however, to convince a single thinking mind, because those were not the causes. If we review the series of peace errors between 1871-88, we find that the true cause was probably concealed because we did not wish to probe our own ideas. It has ultimately brought us to the point that we are seriously thinking of transferring the battle to the night, in order not to be seen—*i. e.*, in order not to be shot at or hit. If it had all been a mere waste of labor, it would not be so bad; but that a whole generation has had an opportunity to imbibe wrong ideas is unfortunate and cannot be remedied at once, since the men thus affected remain among the living! In all the great powers of Europe, re-armament called forth new regulations for the various arms, new firing regulations, new regulations for field entrenchments and field service, in all of which Germany led the way, and by 1889 France, Austria, England, Russia, and Italy had followed suit. The year of 1888 gave to Germany the small-caliber rifle, and the following year the smokeless powder, things which in 1881, when this book was first published, were in part matters of aspiration, and in part had not been given any consideration whatever. These technical improvements have made the defensive the stronger, but successful defense does not ensure a successful issue of the war; the attack is required. The defensive being the stronger, it follows that the attack is necessarily more difficult and, at the decisive points, bloodier. This is the reason why

tactical rules and forms are being sought for the attack which would tend to diminish the assailant's losses.

In reviewing the battles, etc., of the War of 1870-71, we find that, throughout, two main rules were ignored, and that these neglects were the causes of our "great" losses. one of them is the total neglect of or insufficiency of reconnaissance on the part of the commander-in-chief, and of all leaders down to the division and even brigade commanders, whenever they had a separate task; the other is the lack of preparation by artillery before the main forces of infantry were thrust into battle.

There is, for instance, the defective reconnaissance on the 16th of August, notwithstanding that the German cavalry was on the battle-field that was to be, before the arrival of the X. Corps, and had been for hours in close touch with the enemy. Closely connected with it was the further shortcoming, in that the system of reporting was not suitably organized, so that reports were late in arriving, or inaccurate, or were not rendered at all to that leader who on account of the situation should have been first informed.

On the 17th and 18th of August we are met by the equally surprising fact, that the large forces of our cavalry failed to promptly locate the extent of the French right, notwithstanding our intention to give decisive battle.

On the 1st of December Bernhardi's brigade acted even more unskillfully than the 5th Cavalry Division at noon on the 16th of August. Reconnaissance and the organization of the system of reporting must go hand in hand.

In both of these respects Napoleon I. still remains our never-attained ideal, and however much he may have served the Germans as an instructor, they have learned little from him in that respect. Any one loth to believe this should

inform himself of Napoleon's mobility before battle, his reconnaissances on horseback, his exertions and bodily fatigue (at Jena, Dresden, Borodino) in order to gain all important information of the enemy by personal inspection, before committing himself to battle. Having acted in this manner before the arrival of the reports, and having on these rides familiarized his staff with the situation, he made his last dispositions, which never failed of their effect. I must here state in vindication of the Germans in 1870, that of the most important battles fought against Imperial France, but three were fought with the sanction of the commander-in-chief—Gravelotte, Beaumont, and Sedan; all the others, as regards time, object, and forces, were without that sanction. However imposing may be Moltke's feat of assembling 9 army corps and 6 cavalry divisions on the evening of August 17th, yet it is not to be imagined that Napoleon would have issued the order of attack on the 17th without being approximately sure of the enemy's position and of the extent of his right; that information was, in fact, only gained after the battle had begun, and we found to our sorrow that the enemy's line was twice as long as had been supposed. To obtain better results, there is need not only of a proper employment of the cavalry, but also of a nimble, mobile commander-in-chief, who makes a personal inspection before the dice are cast and after the cavalry has sent in its reports. Little of that kind is to be found throughout the war. We learn that the positions were visited on horseback after the battle, but never before that event; and as it was in great things, so it was in small affairs. As a consequence we were always in doubt, and as soon as the subordinate leaders encountered the enemy, they flung themselves against him, though ignorant of his position and strength, and without taking time to reflect how he might be attacked to best advantage. There is but one general who in

this particular acted like Napoleon; it was General von Herwarth, at Königgrätz. Hence also his splendid success without appreciable losses! All events which I witnessed took such a course as to firmly convince me that the species of men who know how to reconnoiter in Napoleon's way no longer exist, just as the species of cavalry leaders *à la* Seidlitz seem to have vanished from the earth. Will either ever return?

An evil must first be located; the proper remedy for it is selected afterward. The chief cause of our losses is to be sought in the lack of reconnaissance preceding the collisions, in connection with the brave but unplanned rush of infantry in insufficient numbers. Reconnaissance should extend to the ground, to the strength and position of the enemy; with the information thus gained his intentions may be inferred with fair accuracy, and the ways and means for carrying out our own intentions are thus pointed out at the same time. All officers down to the field officer should be informed in a few words of the intentions in each particular case (it is now required by Regulations), so that they may know what is expected of them; and if it be objected that there is no time for it, I reply that in the principal case (Gravelotte) there was time, and that it was easy to do it, owing to the enemy's complete inactivity, the like of which is hardly of record, had only the superior leaders realized and taken to heart that time-saving measure. But what was the rule? Brigades and divisions arrived and were thrust into the fight: it was "Forward!" without deploying them in the direction of the action. This was all the information vouchsafed their commanders; in some cases the objective of the attack was pointed out. "Forward!" That was all that the officers, down to the field-officers, learned, and it was even frequently communicated by signal. That was the actual

rule. The troops attacked from the point where they stood, straight to the front, though adjacent ground offered plenty of opportunity for a covered approach. Thus it was in many cases at Wörth, and along the entire line of battle at Gravelotte, with the exception of the XII. Army Corps; in the latter battle the consequences of the omission of reconnaissances and artillery preparation pile up mountain high. Neither suitable formations, nor suitable methods, nor control in so far as practicable, are to be found there. What is spent, is spent! The imprudent and precipitate rush of columns over open ground was one of the chief causes of our losses! Had the action suited the circumstances, military history would know nothing of a Mance ravine, St. Privat, etc., as they are; our literature on losses would not have existed. We can record but few attacks of large bodies which were satisfactory in preparation and execution. Either they were not made, or failed, or barely succeeded, as at St. Privat and Wörth, etc. The concealment of the true evil became the further cause of our many tactical errors in peace, of the entire confused literature on losses, and who knows whether the controversy over long- and short-range fire would ever have arisen, if our troops had been properly led, if we had had tacticians and tactics? Whenever the evil is looked for at the wrong place, it will invariably result that the historical tactical truth is buried under a legion of errors, that erudite sophism obscures the simple demands of reason. Sophism was the prevailing disease from 1871 to 1888; sophism as regards toying with forms, the kinds of fire, direction of fire, short- and long-range fire and fire effect, fire with counted cartridges, swarm volleys, suspension of fire, supply of ammunition, etc., although the whole business could have been set-

tled with few words, if the truth had been disclosed. We have not always adopted the right ways since 1888, but the purification of the atmosphere since that year has had a refreshing effect.

To the principal fault, lack of reconnaissance with its flood of resulting evils, there is to be added the second one, insufficiency or total lack of artillery preparation. It is odd that the artillery finds so little sympathy in the German Army, has so little popularity, and finds so little understanding of its employment. Prince Hohenlohe himself has not hesitated to attack the honor of the artillery. What could there be worse than to raise and spread against one's own arm the charge of cowardice and laxity in its sense of honor?*

Before Sedan the effect of artillery was not, or but little, appreciated by the generals; after that event opinions changed. In not a single one of all the August battles can we speak of a preparation by artillery, and if at Amanvilliers and St. Privat we had taken the time to subject the *points d'appui* to the fire of available artillery, I am convinced that both places would have fallen sooner than they did, and with much less loss, notwithstanding the faulty attack formations of the infantry. Moreover, had we had tacticians to take account of the inviting conformation of the ground and to promptly drop closed formations, the capture of St. Privat-Amanvilliers would not have been difficult, or costly in time and blood; as regards tactics, we should have gained clear conceptions and ideas, while, on the other hand, the false conclusions drawn from faulty measures have spoiled the tactical views. Thus the art decayed through the fault of the artists!

*Compare "Die Feldartillerie in ihrer Unterstellung unter die Generalkommandos," Berlin, E. S. Mittler, 1889.

Lack of reconnaissance and of preparation by artillery are the two roots of our discomfitures and of our "scientific" errors. The second result in part from the first; when we do not even approximately know where the enemy is and what his position and strength are, the first requisite for an intelligent and reasonable preparation by artillery is, of course, lacking. The best of artillery is then unable to fulfill its task; it is hauled here and there, particularly if the system of transmission of orders is faulty or not used at all, or it is assigned too many objectives and has neither sufficient time nor power against any one of them and accomplishes nothing, because groping in the dark. Unless these evils are rigorously counteracted, we shall be subject to further numerous disappointments, which will produce further tactical evils of secondary character, and because that should by all means be prevented, we have here called the child by the right name without "giving names." Neglect of the simplest tactical rules, faulty measures in many forms, neglect of the ground, aimlessness and lack of insight in attempting the same impossible thing by the same impossible method until disgusted, the employment of antiquated forms, ignorance of the ballistics of the enemy's weapon, all of these are some of the points that produced our losses and our subsequent tactical errors, and the appearance of the "Summer-night's Dream" was perfectly intelligible, although I find much in it to disapprove and consider as downright incorrect and harmful. Troops do not conquer unless they are led. The war artist (tactician) is not served with a scheme. The pupils distort the master's good ideas into the radical; the radicals, declaiming against the one-sidedness of others, are themselves preaching one-sidedness in all its polypic forms, until the reality of war

applies the correction that can not be made in peace. Unfortunately, the same is, as a rule, of a trist character.

If the enemy is thoroughly reconnoitered, if the leaders know what they are to do, if, in a word, there is tactical leading, if the moral and destructive effects of artillery are utilized, then frontal attacks are practicable after infantry and artillery have gained the superiority of fire.

The faulty lessons frequently drawn from attacks ruthlessly undertaken, have found their generic term and expression in the word "*Schneid*" (smartness, keenness.—*Tr.*); it is to be feared, however, that the term may lead to overestimation of one's self and to underestimation of the enemy. Without stoutness of heart, courage, and determination, nothing can be accomplished in a perilous situation, but the advocates of "*Schneid*," which is now so prevailing, are moving on false ground because they are nearer to the drill-ground than to the battle-field. We may rest content if in war 20 per cent of the "*Schneid*" observable in peace, particularly with the cavalry, materialize. I only fear that the first great action will prove a considerable corrective. The "*Schneid*," that may spring from erroneous ideas of war, that is based on mechanical forms, and seeks to force a decision by a ruthless rushing in, represents an unthinking tendency which is bound to lead to bloody defeat if put into practice; it is like the mad rule of brute force, which has never accomplished anything. The "*Schneid*" that we need should be the result of careful education and training, the intelligent guidance and framing of moral qualities, intelligence, and knowledge, in reasonable tactical rules and ideas of battle. It should have its seat in the man's breast; otherwise we shall constantly relapse into lifeless and inefficient mechanics. The "*Schneid*" of the First Infantry Brigade of the Guard conveys a terrible lesson. Not until the attack had

failed was it remembered that the artillery should prepare the attack, and what should have been done long before was done only then. In this one example insufficient reconnaissance and insufficient preparation by artillery exacted cruel penalties; such instances occurred repeatedly afterward, though not to the same degree. Le Bourget, on the other hand, shows how we had profited by experience; there reconnaissance was sufficient and the "*Schneid*" manifested was of the right kind, because resting on a rational basis and directed into a proper system for the particular circumstances, etc. Reconnaissance has been rendered much more difficult by smokeless powder, a cogent reason for devoting particular care to it, in order not to fare worse in future. As a result the preparations for the action will perhaps take up much time. It being probable that an army may have to make several deployments, it follows, in the first place, that the independent cavalry should gain superiority over that of the enemy by its strength—*i. e.*, by battle. It is employed, as it were, only as an element of grand tactics—*i. e.*, it is its duty always to locate the enemy's flanks as soon as possible and to maintain uninterrupted communication with army headquarters by means of a well-organized system of reporting, and to send direct reports to the nearest corps commanders also. Unless the enemy's flanks are promptly located, cavalry fails of its task and adds to the difficulty of the superior command in devising its further steps. Reports may be transmitted by good riders, by telegraph, or by cyclists. In the maneuvers at Beauvais and at Grüns in 1893 the brigades had communication with the divisions within two hours after the cavalry reached its positions. In applying modern practice to Gravelotte we may say that the laying of the field telegraph could easily keep step with the advance of the II. Army, and that there

should never have been any sensible interruption of communication between it and grand headquarters.

Though the flanks may have been ascertained, much remains to be done, before the pitched battle, that does not appear at once from the map with respect to the flanks. The practice of riding boldly up to, and through, the enemy's advanced troops, as we see it in peace, is impossible in war, and the results of the reports from patrols will be insufficient; the captive balloon may under certain circumstances be of great service, but is not a reliable means of reconnaissance in field operations, though nearly 100 years (since Fleurus) old; it should therefore not be looked upon as a remedy for the uncertainty caused by smokeless powder. The captive balloon in all its trials has disappointed its most ardent advocates. Fastened to the ground it is subject to sudden, troublesome, and dangerous jolts, when there is the least wind; complete calmness of the atmosphere is very rare, many times the soaked ground may make it difficult or impossible for the wagon to follow, and thick atmosphere may prevent any great range of vision.

The observation ladders also are mere palliatives.

From a favorable point an army commander armed with good glasses may have a good view for 8 kilometers on either side—*i. e.*, in all directions; but such points are rare, and points permitting sufficient view to the front are still rarer.

The only other remaining means of tactical reconnaissance is to engage the enemy in such a way as to compel him to develop his forces to an extent that will allow inferences to be drawn. The very best, and best led, bodies of cavalry no longer possess the fighting power necessary for that purpose. Infantry may not be able to deploy and produce effect (at long range) as quickly as may be desirable, and

thus the artillery, protected by cavalry, alone remains for long-range fire for these purposes. The assailant will then experience the disadvantages advanced positions may entail on him to-day; they cannot be taken without fighting, and the final reconnaissance cannot be made until they are taken. It is therefore not improbable that in a case like that of Gravelotte an entire day will be spent in reconnoitering actions.

Intimately connected therewith are the questions of organization of the system of transmitting orders, and of the distribution and employment of artillery. The former we have sufficiently discussed; about the latter a few more words are necessary. Experiments have been made in the maneuvers of recent years in not attaching any artillery to the advance guard so as to avoid the danger of being prematurely forced to deploy in an undesirable direction. That fear implies a prior commission of errors. Full information cannot always be promptly gained by the use of patrols, officers, and other means that have been referred to, but enough may be ascertained for forming a general idea. What information is lacking will have to be supplied by fighting on the part of artillery and infantry. At this stage infantry will hardly be able to compel the enemy to show his artillery; artillery is needed for that purpose, and in considerable strength. It is not easy to skillfully lead artillery without information beyond the general result of previous reconnaissance, but we have to learn it; the artillerist should therefore be a far-seeing man and competent to judge the situation. Provided the advance guard cavalry does its duty, I can reach no other conclusion than that an "*Abtheilung*"* of artillery should be attached to every advance guard of a division, and that the remainder of the divisional

*A battalion of two or more batteries.—*Translator.*

artillery be inserted in the column of the main body. By means of a good eye, of sudden appearance in force, quick ranging, and continued accurate observation, artillery will in the future be able to accomplish feats that could not heretofore be expected from that arm. Nothing should be left undone to develop the tactical judgment of artillery officers.

Moreover the commanders will frequently have to make the reconnaissance for their own work in person, or, depending on the strength of their command, they may despatch officers of judgment on fast horses, who, accompanied by 3 or 4 well-mounted despatch riders, will approach the enemy as much under cover as possible to gain an insight in the state of affairs from elevated points by the use of good glasses, or to survey portions of the enemy's position from a flank. What I emphasize in this connection is judgment, excellence in horsemanship, and delight in daring. Without that combination of qualities these officers will never be able to accomplish their task in a satisfactory manner.

As a type in this respect I have in mind the present commanding general of the XVI. Army Corps, Count von Häselers, and I know all will agree with me who know what that one officer accomplished in peace and war by just such a combination of qualities. Well, Häselers are no commonplace men, and should for that reason be emulated; without such men an army will be poorly advised where the variable situation on the enemy's side is concerned. That leads me back to the statement I made in the Introduction, and which I meant to elucidate and vindicate in this chapter—namely, that great care should be taken not to employ general staff officers too much in duties of a bureaucratic tendency, and too little in active, practical employment. The two, as a rule, do not go well together; those who incline to the former

as the aim of their lives will dislike the bodily exertion required for practical work. I acknowledge that it may be difficult always to find the right road, but the latter should never be lost sight of, because too much depends on it that would not follow as a natural result in time of war. Field-marshal Moltke demanded good horsemanship and daily reading of good newspapers. It may perhaps not be out of place to point out that newspaper reading, as handled by Moltke, does not seem to prevail to-day, and I would also like to point out that there is no better means of preparing for the general work of the general staff officer than the critical reading of newspapers. The news contained therein is in a sense reports and accounts of doubtful matters, and is frequently contradictory. It offers a fine opportunity for the officers to constantly exercise and test their powers of conjecture, to distinguish the correct from that which is incorrect, and to discover by their own judgment the "true inwardness" in the labyrinth of inaccurate statements. In this respect there is no position that so much resembles the work of the general staff officer in peace and war as does that of an able editor, and the great Moltke knew exactly how to point out everywhere the means that lead up to the great aim of the general staff officer—namely, to gain by personal examination and judgment a more or less correct conception of the truth and of the facts from a mass of inaccurate and uncertain statements, inferences, and paraphrase. All cannot accomplish it by mere work—much depends on natural gifts—nor is it possible in every case to point out the methods; the proverb "Practice makes perfect" applies here; nay, daily discipline in such matters is the bread of the general staff officer, because it requires all the powers of the mind to be concentrated on one point, which psychically, bureaucratically, and tactically, is the vocation of the

general staff officer. These things enlarge and sharpen the judgment; they are to him daily mental and moral gymnastics, not only in the military, but still more, in peace, in the political field. The general staff officer should therefore be master of the latter; it will save him from false, bureaucratic bias, since in tactics variation alone is constant, while war and politics are one in character, inseparable and indivisible. The change in the direction of the march toward Sedan shows how difficult it is to discern the truth among contradictory newspaper statements or reports that seem improbable. We here have the same requirement again in the strictly military field; reconnaissances (in the strategic sense) are frequently made in consequence of newspaper and other reports; the character of reconnaissance is always the same and should always be most extensively practiced in doubtful situations of large or small import. It may be said that the general staff officer is not always available for such duties; I do not insist on it; care should, however, be taken that reconnaissance be dealt with in a way befitting its present and future importance, and that nothing be undertaken without thorough reconnaissance in order that we may not again witness such a lamentable occurrence as at Gravelotte, not to mention other things not quite so bad. General staff officers will, as a rule, be the only ones sufficiently familiar with the ideas of the superior commanders to carry out a reconnaissance with skill.* Every action entered upon without thorough reconnaissance is a game of chance; every attack undertaken without proper artillery preparation, an indiscretion.

*Compare the rôle of Captain Seebeck in "Die Gefechte von Boiscommun und Lorcey am 24ste und 26ste November, 1870" ("The Actions of Boiscommun and Lorcey on the 24th and 26th of November, 1870"), Berlin, 1893, R. Felix, military publisher.

*VIII. Of Turning Movements.**

Turning movements are as old as war, tactically as well as strategically, and many great leaders, conscious of their superiority, have so planned their operations that the tactical turning movement followed as a natural sequence from the continuation of the strategical movement. Thus, for instance, Cromwell acted at Worcester, Napoleon I. at Ulm in 1805, and at Jena in 1806, and the Allies did the same at Leipsic; on the part of the Prussians, we find it in 1866 at Königgrätz, and in 1870-71 at Wörth, Gravelotte, and Sedan; on the part of the French at Coulmiers, Beaune la Rolande, Loigny-Poupry, Bapaume, on the Lisaine; again, on the part of the Germans, at St. Quentin, and in Manteuffel's operations against Bourbaki, etc.

In all these cases the initiatory measures are of strategic origin; in their highest development they result in a complete surrounding, of which Ulm, Metz, and Sedan are good examples.

In order to study military history and apply its lessons, it is necessary to thoroughly investigate the causes in each case, which in turn requires full knowledge of the meaning of terms, of strategy and tactics as a whole, and of their details. A certain tendency unfortunately seems to be formulating, which, if prevailing, should be counteracted by every available means, because beyond doubt leading to confusion and to a decay of the art of war; it is the tendency no longer to respect any boundary between strategy and tactics. Judging by what comes to our ears, that tendency has many adherents, but we fear it would merely furnish us with "*routiniers*" lacking in appreciation of the finer aspects of the art, and who would ever remain superficial imitators

*The term here used by the author is "*Umfassung*," a general term for overlapping, outflanking, and turning movements.—*Tr.*

and who can never lay claim to a thorough understanding of the nature of things. I have no intention to write a discourse on strategy or tactics, in order to convert men misled in their intellectual conceptions. Those who have preached such doctrines have burdened themselves with a heavy responsibility. I will briefly say that a person, for instance, who is incapable of appreciating the difference between one of Beethoven's symphonies and a rhapsody by Brahms is to be pitied, because Nature has denied him the faculty of recognizing, discerning, enjoying, and of surveying the vast field lying between the two in all its gradations and of understanding all its fine distinguishing shades. To such men it is all simply music, to such soldiers strategy and tactics are simply war, and war merely tactics. Their place is in the barracks. Because the spirit, mind, and emotions of such men are insensible to all the finer shades, these fine distinctions, which are a source of real enjoyment to superior minds, do not therefore disappear, nor do the gradations of art; art is simply beyond the comprehension of those pitiable men and soldiers in whom an understanding of it has not been cultivated. Though some people may be unable to distinguish between bright and faint red, and though they may deny any difference in them because they do not perceive it, that difference of shade nevertheless remains, it is simply beyond the grasp of their uncultivated eye; it is the same in the science of war with those who deny a difference between strategy and tactics! Whoever fails to comprehend that the measures resulting in the closing of the ring at Sedan are of strategic origin should keep at a long distance from the art, for to him the art of war is a closed book.

However foolish it would be to deny the fundamental difference between strategy and tactics, it would be equally fool-

ish to keep them ever pedantically, schematically separated. Just as in the highest product of art of any kind the sum total of artistic effect is brought out so that it is impossible to say this line stops here, that one begins there, so in the highest product of military art, in battle, the strategic lines merge into the tactical, and then to go to work and seek for a difference would be to betray the instincts of the artisan. It is a perfectly logical phenomenon in military history that all great generals, of whatever nation, have been men of æsthetic tastes, with a love for the fine arts, men of fine sensibilities, of sharp discernment, of bright and powerful mind; they all had the make-up of artists, if I may express it in this way, and in our military education nothing is more to be deplored than the total lack of everything that tends to develop and refine the taste for art, the æsthetic taste, and all finer sensibilities. For that reason many do not strive for the highest, their conception of their vocation is superficial, they never reflect on its artistic aspect. Their introduction to æsthetics, particularly in connection with rational lectures on philosophy, would be of a thousandfold more benefit than many other things to which half a lifetime is devoted, which merely touch the outlines, and which are matters of course! With such a system of education, tactics and strategy would never have been thrown in the same pot and there would be more of spontaneous effort to become an artist. It may not be inopportune to say so, since it appears, from what has been stated, that the bounding lines between strategy and tactics have been somewhat displaced by recent inventions, and that in the position warfare, which will certainly ensue, the position-battle will be a normal feature. A decision can hardly be expected in such cases without turning movements.

It is natural that the numerically superior should use

his superiority for turning movements, but up to within recent times those who employed turning movements did not invariably possess a great superiority, nor has their victory been due in every case to the turning of the enemy and to the tactics of the superior number of combatants employed. Other important causes are therefore bound to exist which bring about the real decision after the material object has been accomplished. Moreover, there can be no doubt that if anything at all were normal in tactics, turning tactics might be said to have been the rule; in modern times, on every occasion, in the insignificant action as in the great battle, there must be some reason for it. On the other hand, generals have made turning movements with inferior forces even before the introduction of the present improved arms, and have conquered whenever that minority was conscious of superior fighting power. It is plain that we should not, either here or anywhere, content ourselves with reducing such phenomena to rule, with explaining them in a purely mechanical way, and with measuring them with the dividers, which seems to be the favorite occupation of our peace war-artists; military history is useful only when the causes in each case are investigated and understood.

Notwithstanding his considerable inferiority, General Davout flanked the Duke of Brunswick at Auerstädt, and could do so without danger, because the fighting power of the French Army was much greater than that of the Prussian Army, or because the French tactics were better, to express it differently. Davout did not at all act as the "lucky soldier," but as a man fully cognizant of the superiority of the French tactics on account of the superior leading and greater effect inherent in them, and what to the uninitiated did, and does, appear as very hazardous, is in

fact something very natural, something intended and well considered. I do wish to call Davout's resolve something extraordinary, but I desire to point out that, particularly in view of Davout's unfavorable strategical (the "collectors" will, of course, insist on calling it tactical) situation, the example furnishes a standard for all times of what a general may risk without speculating, if he knows both sides and is thus aware when he may deviate from those rules which "tacticians" are wont to consider inviolable. To be a tactician is not to cling to rules, but to adapt reasonable means to the circumstances in order that all the fighting power there is in the troops may be utilized. Davout acted thus, and is entitled to one of the first places among tacticians on account of his intelligent action. I know of no other example of flanking at all comparable with this one, considering the great inferiority of numbers and the victory gained despite that inferiority; the firing power of the French infantry and artillery was certainly not superior to that of the Prussians. The example goes to show that given two opponents armed with like weapons, they will by no means produce the same effect with them, and that the effect depends on the use made of the weapons. It is exactly so to-day! Fighting power and firing power are two different things, and we should not only declaim against those who would recognize but one tactical example as regards forms, but also combat those doctrines which rely solely on firing power. Firing is but a part—the material part—of the fighting power, of which the other components are to be sought in the field of *morale*, of intelligence, and of discipline, all of which qualities should be subordinate to it. If firing power had been the decisive factor in Davout's resolve, he would have been guilty of a piece of stupidity, as it is plain that 40,000 muskets can project more bullets than

25,000, provided the qualities of the arms are the same on both sides.

Auerstädt furnishes proof that, notwithstanding great numerical inferiority, and with equally good fire-arms on both sides, flanking may produce great results, if the flanking opponent employs superior tactics.

While it cannot be denied that the ballistic qualities of all arms are incomparably superior to-day, still, when looking at both opponents, we have to acknowledge that they are about on the same level as regards armament. Hence there has been no change in the essential characteristics; the improved arms simply extend the limits of movement and of fire more or less, thus rendering the dispositions for, and the execution of, turning movements, and the success of any kind of enterprise, much more difficult. I shall endeavor to prove this.

When, after the establishment of the republic, the French had gained superiority of numbers, it was the rule with them, not the exception, to seek strategic turning movements, and the resulting tactical flanking, in the same way as did the Germans in 1866 and 1870-71, not only when the numbers were equal, but also when they were inferior or superior (compare Trautenau June 28th, Gitschin June 29th, Königgrätz July 3d, Blumenau July 24th, with equal or inferior numbers; Wörth August 6th, Gravelotte August 18th, Sedan September 1st. with superior numbers; Le Mans January 10th and 11th, St. Quentin January 19, 1871, with inferior forces). The very first action fought by the republic against the Germans at Coulmiers on November 9th was planned strategically as a turning movement and tactically as "*Umfassung*," as was Beaune la Rolande on November 28th, Loigny-Poupry on December 2d, Bapaume January 2d and 3d, 1871, Lisaine 15th, 16th, 17th of January, 1871, Le

Mans on and after January 5th; all of these instances are taken from field operations. As regards position warfare, Noisseville (first day), Le Bourget, December 21, 1870, were planned as "*Umfassungs*" battles, but Coulmiers was the only one where some success was gained, chiefly because the German cavalry, which should have acted decisively on the right flank, failed in its task. In all of these cases it must be admitted that the French plan for each battle provided for an effective strategic turning movement, that in every case the French had a considerable numerical superiority, and that on account of their superior armament they should also have possessed a great superiority of fire power. That they nevertheless failed was due to the fact, 1, that battles with turning movements are very difficult to direct; 2, that they require an excellent system of transmission of orders; 3, clear judgment and initiative on the part of the leaders; and 4, a high degree of mobility; in brief, a higher degree of training and efficiency on the part of the troops than is possessed by the enemy. Armies devoid of that combination of qualities are unsuccessful, as is strikingly illustrated by the battle on the Lisaine. There the French commander-in-chief, in planning the turning movement, was as much mistaken with regard to the extent of the German line as were the Germans on August 18, 1870, about the French position. It is well known that in both cases the front of the position proved to be twice as long as was anticipated. In both cases the turning movements were planned on wrong premises, and in both cases the error was only found out when the turning movement was under way. By dint of the higher efficiency of their armies the Germans repaired their error, in the main, within three hours, and gained the decision and victory on the 18th of August by means of the turning movement as planned, whereas the French

East Army, whose corps were closely concentrated on the right, accomplished no more in three days than to disentangle them! The turning movement ultimately assumed the right direction, but by that time the fighting power of the *entire* army was broken, and instead of conquering, the army suffered a defeat which culminated in a catastrophe.

A turning movement therefore requires, in the first place, an efficient army with efficient infantry of superior fighting power. Wherever these requisites were combined, there the turning movement with equal numbers, and even with inferior numbers (Auerstädt, St Quentin, and lastly Le Mans) led to success; where that combination is lacking, neither superior number of combatants, nor the greater number of rifles, nor superior fire power will ensure success, for a stout opponent is not driven off by fire; even in the "*Umfassungs*" battle the tactical point has to be carried by assault, and after a protracted fire action the infantry must still possess sufficient fighting power for the final onslaught. Such was the case on the part of the Germans at Wörth, Gravelotte, and St. Quentin, while Sedan is less entitled to mention in this connection. Chanzy's operations against Vendôme (January 5, 1871), where he meant to turn the Germans, show, on the other hand, that of the two opponents meeting on the offensive the numerically weaker Germans, who were to be turned, themselves turned the French as the operations progressed, and that on accomplishing the turning movement (La Tuilérie) the battle was decided by the bold action of a few companies. I do not believe that modern arms and the new powder greatly change the nature of the "*Umfassungs*" battle; that the decision on the turned flank (or flanks) requires an assault as the last act; that the latter cannot be much more difficult than it was in 1870, against

the Imperial Army with the Chassepôt, since the fire power cannot become much greater than it was at St. Privat, for instance; that the side undertaking turning movements is better able to solve the tactical part of the problem than was the case then; and that, on account of the unobstructed view, the turning movement can be much better directed than formerly. The decisive blow will be equally required in future; it may even be delivered by swarms intermixed with small and more solid bodies, the swarm being of necessity the prevailing formation as heretofore.

In that connection we cannot dispense with successive lines (*Treffen*), and they should not be condemned on general principles because wrongly used heretofore; it is only necessary that they be properly used in certain situations and phases, the formations to be employed in each case being left to the judgment of the leaders. Owing to the unobstructed view, great skill is indispensable in bringing the troops forward—*i. e.*, in utilizing the ground for the approach, which is a prime requisite in such matters. It goes to show that success requires the coöperation of many essentials, and that turning movements to-day make higher demands on the superior leaders than on the troops. The leader should therefore make a thorough personal reconnaissance and so inform himself of all important matters as to gain a clear insight into the situation while the troops are on the march, and to be able to instruct and dispose them intelligently on their arrival. It requires great mobility, personal observation, and a tactical eye on the part of the leaders.

Turning movements having gained in favor since the notable increase of fire effect in 1866, it is to be expected, and it is unavoidable, that they should gain still more in future. As regards any fear for the front entertained by the opponents of turning movements and the swarm tactics

inseparable therefrom, we believe that our expositions from military history show that what is usually called a weak front, because of the relatively small number of infantry, has invariably proven sufficiently strong to guard the front, provided the infantry was good, provided its tactical employment on the part of the leaders was correct, and provided it was supported by a numerous artillery. A good infantry is what is specially needed to-day for a turning movement, and it will be well to keep a few battalions in hand for emergencies. If their *morale* is good, the troops, armed as they are with modern rifles, may be expected to develop sufficient powers of resistance if superior forces should turn on them; and with greater probability, as it is only since the introduction of smokeless powder that leaders are able to lead in a manner approximating the ideal in so far as concerns the employment of large bodies and their common object. Again, in the turning movement, infantry and artillery are now able to concentrate their fire on the most important point and just about treble the effect as compared with the past, firing from various points, perhaps from the front and flank, which neither infantry nor artillery could formerly do on account of the smoke. This possibility of common fire direction of infantry and artillery against the decisive point, and the fact that the long-range rifle and the shrapnel echelon fire are bound to reach the enemy's reserves from the front and flank, will, in my opinion, make the attack and the habitual use of "*Umfassungs*" more expedient than ever. This should not provoke the friends of the defensive; facts will prove it as surely as it is better to have eyes than to have none.

In the future attack we have to distinguish between two cases: the assailant can either approach under cover, or he can not. It is unnecessary to state that in the latter case

the assailant labors under a great disadvantage, but it should be pointed out that, in consequence of the absence of smoke, it will be much more difficult to subdue him than formerly whenever he is able to open the action from covered positions.

Stupid measures on the part of the "sub-tacticians" may cause the best planned turning movement to fail in the execution; St. Quentin is an instructive example in that respect. Although inferior in numbers, Göben intended to turn the enemy's right, to push him away from his line of retreat, and to destroy him. It resembles the case of Davout at Auerstädt. The stupid action of the 16th Division and the delay of the 15th Division in coming into action destroyed Göben's plan, and the decision was brought about in the front, exactly the point where he did not want it! But even while the decision was being made, and after it was enacted, the mass of cavalry on the German left remained inactive, though its leading troops had the enemy's line of retreat within their grasp and their opponents were troops of inferior quality. In order that harmony might not be lacking, the cavalry on the right flank acted in like manner, though confronting a shaken and defeated enemy. Coulmiers, Beaune, Loigny, and St. Quentin utterly condemn the German cavalry leaders. In the first case the enemy's turning movement succeeded on account of the inactivity of our cavalry; in the other cases we failed of our object for the same reason.

Prussia's and Germany's opponents in 1866 and 1870-71 never succeeded in piercing the German front while the latter were turning their opponent's flank. At Gravelotte, where there was a splendid opportunity between noon and 3 p. m. for breaking through our IX. Corps in the direction of Verneville, the enemy failed to perceive his advantage; while it would not have been impossible after 4 p. m. to

break the German front at some point there, it would not have amounted to more than a temporary success, because at that hour a second line (III., X., and II. Army Corps) was forming in rear of the first. The various frontal attacks of the French at Wörth brought but transient advantages and ultimately shivered against our artillery. The six attacks against the 3d Infantry Brigade of the Guard at Amanvilliers were repulsed, but they were intended as mere forward movements, and not meant to break our front. On the other hand, there are two very instructive cases where the superior enemy, who undertook to turn his opponent, was not only not able to defeat the latter, but was himself defeated and had his line of battle pierced. They are the remarkable battles of Beaune la Rolande on the 28th of November, and of Loigny-Poupry on the 2d of December. In both battles the situation bears a certain resemblance; at Beaune the enemy meant to turn the three brigades of the X. Army Corps with his XX. and XVIII. Army Corps, while portions of his XV. Corps were to support the French left and reap the fruits of the expected victory; at Loigny-Poupry the enemy intended to do the same thing with his XVI. and XV. Corps supported by the XVII. In either case two separate battles resulted: 1, Beaune and Juranville; 2, Loigny and Poupry. In the first case the 38th Brigade was very successfully turned on three sides, but the turning movement of the XVIII. Army Corps failed against the 37th and 39th Brigades at Juranville, both of which maintained themselves between the two hostile corps in such a way that the latter could not join hands effectively until very late. The very much inferior Germans held out in that situation, and finally, at 3 p. m., when supported by the heads of the III. Corps, they turned the enemy themselves, notwithstanding their numerical inferiority. There

was no intention on our part to break through the enemy's turning movement; yet, looked at from the tactical point, the offensive taken at Juranville practically had that effect. At Loigny-Poupry the French meant to turn the Germans on the East, but a prompt change of front on the part of the 22d Division made the movement impossible, while at the same time the capture of Loigny by the 17th Division pierced the enemy's main position in front. The French center was successfully pierced in this manner. We have dwelt on these two instances at some length because the latter particularly is almost unique in military annals on account of the numerical inferiority. It is one of the cases that mark the culmination of the tactics of the Germans as regards the leading, as well as the endurance and fighting power of the troops. In both battles (at Beaune and Loigny) the swarm intermixed with small bodies in close order was usually employed on the offensive. That the lines of the French, who were making a turning movement, were pierced is chiefly due to the high degree of offensive spirit still extant in the German troops after the heavy losses of the war (I. Bavarian Army Corps and 22d Division), and to the clumsiness of the French leading and of the French troops. No army should make the "*Umfassungs*" battle its rule, unless its leaders and troops are fully equal to the task; where such is not the case, it is all the more necessary that the army corps be so formed and disposed *before* the beginning of the turning movement that the resulting line of battle will show no gaps, where the enemy may penetrate, maintain himself, and pierce the hostile front. The French invariably endeavored to dispose their troops in this manner before the movement, but did not succeed even in that. It need therefore not be specially stated that they would never have been successful in launching a turning move-

ment direct from the march. Nor did they ever attempt it. The diversity of "*Umfassungs*" battles and actions as fought by the Germans—notwithstanding a number of errors—thus constitutes the most eloquent proof that a highly efficient army alone can develop such diversity and gain success, while the French, on the other hand, never succeeded in carrying out a grand turning movement—notwithstanding their great numerical superiority, not even at Coulmiers and Bapaume, both places being evacuated by the Germans of their own accord after repulsing the enemy. All turning movements partake more or less of the character of great "combined movements," which are very difficult; an army not thoroughly efficient had better avoid them. The fact that certain tactical fanatics declaim against the "*Umfassungs*" battles of the Germans simply goes to expose their inferiority as "tacticians," and if one side is invariably successful and the other invariably unsuccessful in the same thing, the proof that superior efficiency won, in spite of our opponent's superior fire power, is so convincing that it is superfluous to say anything about it. It follows with certainty that, in consequence of the superior fire power (small-caliber arms, increased fire effect of artillery, absence of smoke), the Germans will more than ever be partial to turning movements; and that in doing so they will be the more protected from the danger of having their line pierced because our fire power has been at least trebled since 1870-71, while that of the French, in comparison with that of the Chassepôt, has merely gained in strength. We should therefore preserve our composure, base our calculations on facts, and give no more room to the play of imagination than is rational; then, not only shall we be able in the future to carry out the same things as deliberate designs, but we shall carry them out much better, because we can give more empha-

sis to our intentions; and, for the latter purpose, a proper use of the artillery is requisite above all other things. That done, there is no reason why, after the superiority of fire is attained, the final onslaught should not be made with hurrah and beating of drums just as in 1870-71; at that stage the enemy's fire will not be as dangerous as at the beginning, and formations may then be used which would have been inapplicable for purposes of fire action up to the attainment of the superiority of fire. I can only repeat that there should be legitimate freedom and no orthodoxy, either in favor of or against any particular method. One consideration, however, it is well to point out—namely, that the side making a turning movement will probably never have sufficient artillery (*i. e.*, efficient artillery) to batter the enemy's front. Where the enemy selects wide, open plains for the battle, the artillery question becomes the main question, and that arm will never be pressed for space. Two instances of defense remain to be mentioned where, in consequence of the conformation of the ground, the Germans, though on the defensive, flanked the enemy—namely, at Villiers on November 30th and December 2d, and in the battle of Mont Valérien on January 19, 1871. In both cases the enemy had a considerable numerical superiority and his intention was to turn us; but all attempts to gain any important advantage by combined front and flank attacks failed because outflanked by the defensive position of the Germans and of the manner in which the Germans turned their advantage to tactical account.

A few words about the "*Umfassungs*" action at Le Bourget on October 30th. The three columns assailing the village from the north, east, and south had about one-half of their troops formed in close order, the other half in swarms. All three columns advanced simultaneously and

resolutely in that formation by companies, and for the most part without halt; it was about 8 o'clock in the morning, and the enemy's infantry could fire 1000 to 1500 meters, in three directions. It was not a real surprise of the enemy, since all three columns were still 800 to 900 meters from the village when our artillery fire called the enemy to his lines of defense.* None of the columns suffered itself to be embroiled in a fire action; all accelerated their advance. The loss of 450 men suffered here by nine battalions can surely not be called excessive in view of the Chassepôt fire, and the hostile garrison, which numbered about four battalions. Le Bourget was an advanced post, but the action is nevertheless instructive, and what could be done there will be possible in the future, though the columns would not be so disposed in the north and south as here, because, on account of the long range and power of penetration of modern rifles, they would inflict losses on each other. In other respects Le Bourget remains the standard for similar cases, of which there are bound to be more in the future than there were in the past.

The unobstructed view, the long range, and the increased effect of infantry and artillery fire make it necessary to begin all preparatory measures for a turning movement, either against an advanced post or in the pitched battle, at a greater distance. In this respect the consideration of unobstructed view will affect us more than the range of the enemy's rifle, which, in comparison with that of the Chassepôt, has not so very much increased since 1870-71. It follows that the superior leaders should precede their troops in order to divert them from the column at the proper time.

*For details, see Von Kries and Von Besser. History of the Empress Augusta Grenadier Regiment and of the Rifle Battalion of the Guard.

This is an important duty for the division and brigade commanders and still more for the commanding generals, as it is the only way to avoid crowding, crossing, and delays. It is the more indispensable, as the improved fire-arms will naturally impel the fighting troops to exert their fire power—*i. e.*, to extend toward the flanks. At this point superior leading encounters difficulties which cannot be determined in advance and which can be overcome only by early reconnoissance, by the prompt diversion of the troops assigned to the turning movement, by circumspection and understanding, by good organization of the system for the transmission of orders, and by a sufficiency of means for the same, etc.; to avoid and overcome them all will, of course, be impossible. That these difficulties will be very great is evident from what was intended and what was accomplished at Gravelotte, and what had to be done to gain success at all. In forming a conception of what the course of the battle of the future will be like, Gravelotte is and remains tactically the most instructive example on account of what the tacticians failed to do, and on account of the many critical tactical situations they thus invited. In all military history there is hardly a battle where not only the subordinate but also the superior leaders made so many tactical blunders as did the Germans at Gravelotte. In my opinion, the concentration of the armies before the battle was the greatest strategic feat accomplished, while in tactics the Germans did their very worst; tactically Gravelotte is a perfect nightmare. Considering the excellence of the generals present, we can hardly expect to have better ones in the future. As the best are apt to commit errors, it is the more reason why we should learn to see things in the right way; we note but two exceptions at Gravelotte—namely, the commanding

generals of the XII. and VIII. Army Corps, since the shortcomings of the latter corps cannot be charged against General Göben.

Cases will probably be more rare in future where, as at Wörth and Königgrätz, the last march before the battle converts the more or less intentional turning movement into tactical flanking. I also believe that, as regards concentration before the battle, Gravelotte is also the strategic standard of the future battle in so far as it is at all proper to speak of standards—*i. e.*, marching and concentrating on the first day, and fighting on the second. The second day may perhaps be lengthened out into two. As regards information of the enemy gained after the concentration, Gravelotte is not a good example, to be sure; and in view of the present nature of the employment of cavalry we may assume that there will be no repetition of such things; also, that it will be the rule to concentrate the armies before the battle, as was Napoleon's method, and that the assailant will not issue his orders, particularly for turning movements, until after the concentration. The opposing lines of battle will probably not often be closer to each other than the two opposing armies at Gravelotte on the morning of August 18th were in the center, on the line from Montigny la Grange to Verneville and to our IX. Corps. It may thus be further stated that, assuming information of the exact position of the enemy to have been gained, the turning movement will have to be initiated 5 to 6 kilometers and more from the enemy. It entails great difficulties for the direction of the concentrated army. The Germans overcame the difficulties at Gravelotte, and since turning and flanking will be the rule in large and small actions, we should study the disturbing elements in the course of that battle. In that way our modern "war scientists," who no longer acknowledge any

difference between tactics and strategy, may perhaps be brought back into the right path; it will show them how in the dispositions for, and in the execution of the pitched battle, the strategic consideration prevails and is decisive, and that on that very account the task of the tacticians from the beginning and through all the phases of the battle has become one of graver responsibility. If they do not know, or if they fail to understand, the strategic motive, the troubles of Gravelotte will be repeated in an aggravated form; owing to the necessary extensive measures, it will result, not in a Gravelotte such as it turned out after all, notwithstanding all the blunders, but in a Lisaine battle, such as it was fought by the French—*i. e.*, there will be no turning or flanking, and the result will be defeat. In such a case the Napoleonic method of piercing the opponent's line will have as much prospect of success as in the days of Napoleon himself. If the tacticians know the strategic motive, if they assist in its execution, then Sedan shows what skillful turning movements, resulting in a complete envelopment, may accomplish; if the strategists have "lost the thread," the battles of Beaugency-Cravant (8th, 9th, and 10th of December) exhibit the anomaly of a frontal battle, which certainly has nothing in it to invite its repetition: firing on both sides for three days, without other result than expenditure of much lead, is not indeed an elevating spectacle for an army whose successes had heretofore been chiefly due to turning movements and flanking. Flanking may sometimes not have the expected result; a frontal battle may have none at all! Frontal battles should be altogether expunged from the military dictionary; it is not fire alone that gains the object, it is the flanking combined with proper direction of fire. When the opposing forces are equal, modern arms remove any danger there may be in outflanking the enemy; the assailant will

therefore make it a rule to turn his opponent, and all tacticians should be fully imbued with that rule. The many instances quoted of far superior opponents on various theaters of war: Noisseville, first day; Bapaume, North Army; Le Bourget, December 21st, Army of Paris; Lisaine, East Army; Baune la Rolande and Loigny-Poupry, Loire Army, etc., all under the most varying conditions prove the same truth, that turning the enemy calls for more than "a good plan"—namely, sufficient reconnaissance, proper disposition of the troops, careful regulation of the system of orders and reports, and, above all, an army equally good in all its parts, and excellent infantry. That militia armies are unequal to outflanking operations is strikingly shown by the campaign against the republic, and as the "*Umfassungs*" battle will be the rule in future, wise army leaders will more than ever insist on good infantry. What Davout demonstrated at Auerstädt was repeated in 1870-1871 in various ways—namely, that superior tactics proffer the greatest safety in outflanking; superior tactics are impossible without superior education and training—*i. e.*, without an army of superior quality, superiority of numbers being of less importance. Armies without training (republic, 1870-71), and armies misguided by drill-ground fancies (1806), are equally impotent!

As regards the forces to be concentrated for battle, the approximate limits are also indicated at Gravelotte; otherwise direction would become more difficult than it is already. The latter should not be misunderstood, and impossible things should not be expected from it, so far as the commander-in-chief is concerned; for, as regards leading, he is merely a strategist; he cannot do much more than assign to battle units their directions and objectives, and keep in hand a reserve; everything else is the business of the tacticians—*i. e.*, of the commanders of battle units. In that respect

the conduct of battle has been much modified as compared with Napoleon's methods; divisions and army corps once engaged can no longer be diverted at pleasure, but, from the strategic point of view, Napoleon I. is and remains nevertheless the great master in conducting a battle, and whom the Germans have equalled but once, at Sedan. As compared with Napoleon, they failed above all in reconnaissance, in the use of artillery with its sequences, and in pursuit. Königgrätz and Gravelotte approximate the Ulm and Jena of Napoleon. If the outflanking opponent is equal or slightly superior in strength, he may outflank on one flank; if superior, as at Wörth and Sedan, he may turn both flanks, and in the latter case the battle should invariably result, and has resulted, in a catastrophe. While the commander-in-chief can do no more in the way of leading after the battle is opened, than expend his battle units as he intended, he is compensated for this shortcoming by the fact that he is able to prepare from the beginning for outflanking the enemy in the most effective (strategic) direction, and by the fact that he is at the same time able to take care that the cavalry shall be on hand for pursuit after the turned flank or flanks have been defeated. The practicability of turning both flanks will depend on the character of the enemy's position (negative at Gravelotte, positive at Wörth). The foregoing goes to show the extraordinary preponderance of strategy over tactics, because, according to human judgment, outflanking tactics must be the rule in battle for any one who wishes to attack at all.

I have frequently cautioned against any kind of orthodoxy, and desire to do so again at the end of this chapter, as regards leading in battle. As there is no rule without exception, so the exception of Loigny-Poupry teaches that

under certain circumstances a battle may yet be directed as were those of Austerlitz and Lützen by Napoleon.

IX. Of the Frontal Action.

Various events of 1870-71 go to prove the soundness of my opinion that with proper dispositions, when the enemy has been subdued by the fire action of infantry and artillery, the attack of a brigade is not only practicable to-day, but also successful. I call to mind the determined assault of the 33d Infantry Brigade under General von Kottwitz on Loigny with part of the troops in close order. Three battalions of the Seventy-sixth and one battalion of the Seventy-fifth shared in the assault, and not until they had penetrated the town from the northeast and east—*i. e.*, from the flank—did the swarms of the Bavarians enter from the front. I am convinced that without the assistance of the former the skirmishers of the latter would never have succeeded in getting into the town. When the attack is preceded by the proper tactical preparation, as in this instance, the defender's fire power will be so reduced in the end that the controlled attack is the quickest and least bloody way of deciding the conflict. An indispensable prerequisite is, of course, that there be tacticians and that the several arms be logically employed, for there is such a thing as logic even in tactics; another prerequisite is that the ground be utilized during the advance, which, in that case, should be resolute. Our large attacks failed almost without exception on account of their inopportunity, of the selection of the wrong tactical moment, of the disregard of the situation of the battle and of the ground, and because the troops were flung into the fight by driblets. After the capture of Loigny, General von Kottwitz brought up his two fresh battalions of the Seventy-fifth, which drove the

enemy from Villours at the point of the bayonet, captured the village, and thus decided the battle. Such instructive examples are rare, Fate is chary of them; but when we do have a few, we should turn them to good account.

It may not be out of place here to state that where the terrain affords points of direction as at Château Goury, Loigny, Villours, there is no difficulty in announcing them to the troops beforehand; they can direct themselves by them without further misunderstanding. In spite of this precaution, part of Kottwitz's brigade swept past Loigny toward Fougéu. When on a perfectly open plain, or when emerging on open ground from a defile, it is easier to select a point of direction in the terrain some distance in front, than among the troops themselves, which, under such circumstances are availing themselves of cover.

A nice parallel to Kottwitz's brigade at Loigny is Starkloff's Würtemberg brigade at Wörth. It reached the battle-field after the enemy had been shaken; crossed the Sauer by the bridge at the Bruchmühle, took the direction of Elsasshausen and then of Fröschweiler, passed the line of battle of the V. Army Corps after a brief fire action, and was the first to get into Fröschweiler, its troops at that instant being chiefly in close formation. The advance of the three groups of the brigade with flying colors exercised an animating effect over the other troops, part of whom joined the Würtembergers. During the march requests for assistance reached the brigade from Elsasshausen as well as from Fröschweiler; it approached Fröschweiler under General Starkloff in the following order: Third Rifle Battalion, in its rear the First Battalion of the Fifth Regiment west of Fröschweiler; First Battalion of the Second Regiment, south; and on the east of the village Second Battalion of the Fifth Regiment, and the Fifth and Sixth Companies of the

Second Regiment. The advance having been skillfully conducted and proper preparations having been made, the controlled assault was as successful as at Loigny, and it is really the simplest, shortest, and least bloody way to success under such conditions; nor is it any different if the preparations are made in the early morning, as at Le Bourget. How about the losses? The four battalions (minus one company) of the Twenty-eighth Brigade lost at Königgrätz 10 officers, 190 men; the 9 battalions of the Second Division of the Guard at Le Bourget lost about 450 men; the 4½ battalions of Starkloff's brigade at Wörth, 17 officers and 339 men; and Kottwitz's brigade at Loigny, 21 officers and 423 men. Are the conditions of rationally conducted attacks so very much different now? I should say, no! Of course, when the prerequisites we have named are not there, there will be no such success; I refer to Maire's brigade at Wörth, to the assault on Loigny led by General de Sonis, and to the various attacks by the brigades of Vivenot, Brissac, and Durochat at Beaune.

Outflanking, or turning without engaging in front, is inconceivable, and, however frequently I have warned against orthodoxy in this or that direction, I must do so again. I have frequently stated that it is really the superior command, not the man, the company, or the battalion, that fights an "*Umfassungen*" action, since these units always fight a frontal action. It follows that the conflict will always be along the tactical front, since there is nothing that could take its place; its execution, however, should be suitable and tactically correct. Conflict along the tactical front being inseparable from the conduct of battle and from the decision, it would be foolish and anomalous to banish every frontal attack from the battle-field; the faulty ones should be banished and the good ones retained. Military history teaches, in the first place, that in case of a very strong front

the frontal attack promises no success against the muzzle-loader. The frontal action of the I. Army at Königgrätz is a case in point; the same thing recurred at the Mance ravine at Gravelotte. In the first case the "tacticians" did not seek the decision in the front, and it was well they did not; in the second case the "tacticians" did want it and piled blunder on blunder without notable result. But at Königgrätz the result of the frontal action of the I. Army was nevertheless enormous, and so was that of the frontal action of the V. Army Corps at Wörth. The attacks on both sides were frontal, and most of them netted more or less success. Thus will it also be in future. I call to mind the counter-attacks of the Austrians in the wood of Maslowed, the counter-attacks of the French at Wörth and against the Mance ravine, etc. In all these cases both opponents fought purely frontal actions, yet the enemy's lines were completely driven back. On the other hand, a number of frontal attacks of Prussians and Germans, quitting the defensive position to assail the enemy, were successful, even that of the II. Army Corps on the second day of Villiers, and of the Würtemburgers on the first day of the same battle, and that brings me to the salient point. Wherever the ground is in any way favorable, good infantry should keep on charging the enemy in front; fire alone does not suffice to subdue him, and from this resulted the typical character of the offensive battle in the front at Wörth distinguished by the surging to and fro of the various charges. Who will deny that the charges of the Germans did not net a great result, notwithstanding many defects which will in future be remedied by greater unity of action? It is the vigorous charges alone, in connection with fire, that enhance the severity of the action to the maximum limit of endurance on both sides. This should invariably be the course along the tac-

tical front, so as to enable the flanking troops to deliver the decisive blow. To neglect it and to engage in a frontal fire action at long range would be to suppress the offensive spirit of our infantry, to diminish its tactical value, and to lose the battle! Frontal attacks should not be discarded, but they should be better organized and undertaken with larger bodies under single control. They may entail losses, disorder, and indecisive surging of the troops, but they are highly instrumental in preparing the decision.

In the front, the action of infantry assumes the form of a series of onslaughts while the commander should seek to gain the decision by outflanking—*i. e.*, pushing the attack home. I am thus distinguishing between onslaughts for the purpose of wearing the enemy out along the tactical front and the attack for gaining the decision on the tactical flank; neither should be made before the superiority of fire has been gained. To be sure, we did not always take sufficient time for it. This rule should never be deviated from; otherwise we are apt to return to the *indecisive* position warfare. The fact that infantry—for instance, the Fiftieth Regiment at Wörth—after being engaged all day on the tactical front, retained sufficient power to rush the key point, Fröschweiler, should silence those who deny the necessity of frontal action as a general principle.* To make concessions to human nature in such questions would be to betray weakness and timidity. It was fresh troops, as a rule, mostly closed squads or companies, that carried the swarms with them in a charge (Wörth), and it was the closed bodies on which the worsted swarms rallied; it is not expected that it will be the same in

*On rallying in the wood near Elsasshausen, Captain von Boguslawski had about 20 men, and on entering Fröschweiler about 25, of the Third, Sixth, and Twelfth Companies of the Fiftieth Regiment. (Pages 243 and 248 of the History of the Fiftieth Regiment, by Von Boguslawski.)

the future. After a success or repulse, the leaders are endeavoring (Boguslawski) to rally their men in order to lead them forward again; that constitutes the true "*Schneid*," because it is coupled with good sense and brings about that high degree of resisting power and of stubbornness in the modern fire fight. To relinquish one iota of this would be the very worst thing we could do, for I repeat: the action of the troops is always a frontal one. It should be conducted rationally and in a manner in keeping with modern arms. By beginning rushes at more than 1000 meters, I say we would deprive ourselves of the possibility of making those successful, though bloody, onslaughts. The advance by rushes in combination with long-range fire paralyzes the offensive spirit. The advance should be made without pause, with fully deployed front, and successive open lines, depending on the terrain. Opportunities for long-range fire should, of course, be taken advantage of, but it should be left to the discretion of the leaders, as should the choice of formation during the advance, and of the direction of the advance within the sphere of the brigade. From what has been stated it is plain that the difficult question is not settled by the mere statement that the troops in rear should be formed either in line or in column. The defender would indeed be foolish not to select positions permitting of the full effect of improved arms. In the case of such positions, stretches of ground may be encountered where neither line nor column can be maintained in close formation when the assailant enters the medium range. Thus in the maneuvers of 1893, for instance, the XVII. Army Corps employed open lines, the VIII., XIV., XV., and XVI. Corps promptly developed strong skirmish lines, followed by closed bodies at a distance of 300 to 400 meters. I consider the latter wrong, for it is a normal attack.

The assailant's troops invariably fight a frontal action, whether they flank the enemy or not. The effect on the enemy of this frontal action against his front and flank is best understood by a reference to Wörth. In the same degree as the French felt the clamps around them tightening, they sought to disembarass themselves by frontal charges of infantry and cavalry. The clamp was thus sometimes bent outward, but was immediately contracted by the offensive spirit of our infantry. There was a constant repetition of this at Wörth until the end of the battle, when the enveloping flanks came together in the center at Fröschweiler. Though the flanking troops are thus fighting a frontal action, still, the unobstructed view, the great range of the rifle, and the practicability of intelligent coöperation of infantry and artillery combine in conveying to the individual soldier the impression that he is fighting an enveloping action, and that is a decisive consideration, because addressing itself to the individual! The flanked opponent, on the other hand, has the impression that he is seen and fired at from two or three directions, which is bound to lessen his *morale* at the very time when that of the assailant is increased by what he is seeing and effecting. The "*Umfassungs*" action should therefore become the normal form of battle, as it were; but to make it feasible, the flanker must undertake a series of frontal onslaughts, under whose protection alone, in combination with fire, the flanking movement can be effectively carried out. The improved arms cannot abolish the frontal attack. Frontal actions will be indispensable for assailant and defender in the future as they were in the past; it is by flanking the enemy that the full effect of which the new arms are capable may be realized; thus the sum total of moral and material effect is accomplished!

These expositions will explain the extent of my concurrence in the suggestions of the book "*Der gegenwärtige Stand der Gefechtslehre und die Ausbildung zum Gefechte*" ("The Present State of Tactics and Training for Battle").*

X. Of Village and Wood Fighting.

We frequently hear the statement that the rôle played in battle by villages, farmsteads, and woods would in future undergo many modifications. I have to be brief on this point, because a thoroughly satisfactory inquiry would take too much space. The reader will be able to form his own opinion, and it will become plain whether and to what extent these statements are justified.

It is assumed that the destructive power of modern infantry and artillery fire in connection with unobstructed view, and the practicability of concentrated mass-fire of both arms, will make the obstinate defense of villages, towns, and farmsteads impossible in future; that on this account it is better not to undertake a direct defense of such places, but to use them rather as protection against observation and fire of the enemy. It is further recommended to employ infantry in front of these places, ensconced in ditches and other natural and artificial cover. Such also is the drift of the German Regulations.

Three questions are evidently involved: 1, the location of the village; 2, its extent; and 3, its construction. It has already been explained that villages and farmsteads will no longer be found useful as advanced posts, and in that particular the conditions have actually undergone material modifications. Ste. Marie-aux-Chênes, for instance, and St. Hubert would no longer play the same rôle as on August 18, 1870; still less would an isolated advanced post, as Wörth

*By Keim, Berlin, 1890, E. S. Mittler.

and Le Bourget, even if of the dimensions of these two latter places. In that respect the question is settled and it only remains to say something about villages and farmsteads in the line of battle. I am well aware that Wörth did not gain its importance until the French decided to capture that post in front of their position.

We have seen that on an Austrian target-range a rifleman posted behind an embankment of a cross-section of 140 centimeters was mortally wounded by a Mannlicher bullet at a range of 200 meters, but this point merely involves a question of earth cover, of rifle-trenches. Villages do not everywhere bear the same character; a French village and one in Poland, for instance, are greatly different, and on account of their situation, construction, and extent, the former may be, under certain circumstances, as suitable for defense as formerly, though it was equally faulty in former days to restrict the defense to the place itself. To defend Bazeille, for instance, it would be necessary to include the adjacent heights in the problem.

In future many villages and localities will be found within the battle-field, and it is necessary to make up one's mind whether or not their defense should be undertaken. I believe that in France the answer will in many cases be in the affirmative, because châteaux with extensive parks, surrounded by walls half a meter and more in thickness, are frequently situated in the vicinity of villages. The Germans did well to defend the castle of Montbéliard and those of Villiers and Goury with their parks, and to convert them into the chief *points d'appui* of their positions. I fail to see why we should do otherwise in future. The French defended Fröschweiler and St. Privat with great stubbornness; the Germans could not be driven from Beaune by the enemy's fire, in spite of his ten-fold superiority, and notwith-

standing the fact that frequently the attacks almost reached the stage of a hand-to-hand conflict. The obstinacy of the defense of Fröschweiler and St. Privat was chiefly due to the fact that much of the defending infantry was ensconced under cover in front of the villages. Special advocacy of that sort of defense to-day raises no new issue; it merely tends to give the force of principle to a feature that has proved effective. It would, nevertheless, be an error not to make places having the location and extent of St. Privat and Loigny the principal supporting points of the position, either on the flanks or in the center. I have already pointed out the solid construction of French villages, among which some may be found that will give some protection even against the destructive power of field artillery. We cannot therefore, expect to simply reduce such places to ruins or to destroy them completely by conflagration. They are too extensive for that. Though a great part of Fröschweiler, St. Privat, Beaune, and Loigny were in flames, they were not abandoned on account of either the conflagration, or the enemy's fire, or the hail of fragments of stone and of projectiles. Fröschweiler, St. Privat, and Loigny succumbed only to assault. We omit the singular street fighting at Bazeilles, because not typical either for defense or attack; but St. Privat, Fröschweiler, and particularly Le Bourget and Loigny, show how obstinately the defender may hold on after the edge of the village has fallen into the enemy's hands. The street fighting at Le Bourget and Loigny, for instance, lasted several hours, and would have given the French ample time for the arrival of considerable reinforcements. This consideration alone should be sufficient reason for not expunging village fighting from tactics.

The exterior reserves and the troops fighting on the flanks have at all times been of prime importance, and a dis-

cussion of the defense of a village in the main position is inconceivable without giving them due consideration.

I believe it would be well to reckon in the future on village fighting, chiefly on account of smokeless powder, in all cases where the fire may be arranged in tiers as at St. Privat and Loigny. If it was difficult formerly to see the infantry posted under cover in front of the village and to take it under fire (St. Privat, Fröschweiler), it will be far more difficult in future, which, particularly in the case of extensive villages, will make the defense of villages more feasible than formerly. We may be sure that the struggle for the ground in front and for the edge will be more protracted and obstinate than formerly; which is due to the character of smokeless powder when the defender has a wide field of fire. Owing to the long range and sheaf-like form of artillery fire, I should consider it an error to restrict the use of villages chiefly to that of shelter for reserves and large bodies of troops, because heavy losses are hard to bear for *inactive* troops thus posted; on the other hand, I hardly know of an instance of good troops being driven from any defensive position by mere fire. It might rather be recommended to post the reserves at points where the assailant's means, usually known to the defense, will make him expect them least. I do not desire to go further into details; I believe, however, that the more conspicuous isolated farmsteads are, the less their value.

The principal defense of villages will probably be made in the foreground. The reserves will probably be posted on one or both flanks; as their employment will be as heretofore, for increasing the fire power, in counter-attacks, in entrenching and holding rearward positions and in covering the retreat. All these duties are inseparable from village fighting in battle. Since favorable localities offer such a variety

of means to the defender for the defensive as well as for the offensive, it follows that, owing to the attraction exerted by such objectives, both sides will exert their full power when struggling for these points. The superior destructive power of modern fire, the greater range and fire effect will not change this much. And in what way should the new method of fighting—the result of new arms—change the fighting in the interior of the village? Since it is not possible to remove objects like villages from the position, it is better to utilize them for the battle; infantry should no more think it impossible to victoriously hold a village than to carry it by assault. It should be able to do both, and it is able if it wants to, and if it possesses the tactical qualities.

Although we shall ever find extensive positions devoid of localities and farmsteads, but few will be found devoid of woods, which may be situated in the position, in front or in rear of it, and at different points; they may vary much on account of the character of the trees and of the ground, their character depending on these features as much as on their extent in width and depth, and on the shape of their edge. In battle a wood may serve as cover for the approach, it may be the objective of the struggle, or it may serve to cover the retreat, in all of which phases it is of first importance to know whether the wood is practicable for troops. We are dealing here with tactical considerations.

I cannot go into the details of the many and great differences of woods. The handling of a French wood is based on different principles from that of a German or Russian one, and it is necessary that the officer understand the tactical differences springing therefrom. Every officer should therefore be well informed on these subjects, which are fundamental in tactical training. In general it

may be stated that the French as well as the Russian (Polish) woods make higher demands on leaders and troops than the German variety, and that smokeless powder has greatly facilitated the direction of an action in them. All woods, even small ones on dry ground, possess a considerable degree of humidity. In combination with the moist air, the smoke used to form an impenetrable stratum, which obstructed the view and made control of the action impossible. That is one of the reasons why woods used to be avoided. The smoke is not in the way to-day, and the young officer has no idea of the former difficulties. In the absence of other obstacles, the fighting in a wood may indeed be controlled to-day, though the echoes of musketry discharges and of words of command are even now very troublesome in woods of small extent. The more extensive the wood, the more difficult is the control, which in large woods is, even to-day, only practicable to a certain degree at particular and favorable spots. Aside from the fact that artillery and cavalry cannot be used in them, woods have grave disadvantages, since extensive woods frequently obstruct the view of the commanding generals and other leaders. Owing to the increased power of penetration of infantry projectiles, trees will rarely prove effective as shelter; the great dispersion of artillery projectiles also deprives the wood of most of its character as cover from artillery fire; moreover, woods, and particularly pine woods, will be more apt to be set on fire. On the defensive it is most important to hold the edge of the wood; when that is lost, attackers and defenders are about on even terms, and it is only at clearings that the defender again has the advantage (wood of Maslowed, July 3, 1866); farmsteads may serve to revive resistance, as strikingly illustrated by the action at Ladon on November 24, 1870. Woods are, as a

rule, poor supports for the flanks, and are most useful when of moderate extent and situated in the front line. Thus, for instance, the little fir copse of Colombey on August 14, 1870, and the Bois de Tronville on the 16th of August, 1870.

After these general remarks, we have to discuss the rôle of woods somewhat in detail, because they can hardly be wholly avoided on the future battle-field; and it should be remembered in this connection that it will be more difficult to ascertain the strength of the defenders, that by a suitable distribution of his fire the defender may greatly deceive the assailant, and that in the future the latter will have to fight for the sake of reconnaissance, and cannot make his principal dispositions until afterward.

Among the woods used as cover and traversed on the advance we may mention the wood of Popowitz (July 3, 1866), the wood of Maslowed (Swiepwald), the Bois de Vaux on August 18th, and the wood of Beaumont on August 30, 1870. The first and last of these woods were turned to such excellent account by the Twenty-eighth Brigade and by the IV. and XII. Army Corps respectively, that the subsequent successes may be ascribed to it. Deductions: After sufficient reconnaissance has furnished a correct idea of the wood, it should be entered unobserved, and traversed quietly in close formation; on reaching the farther edge, the deployment should be made simultaneously upon preconcerted signal, in order to open the action from as many points as possible. In the second case, the Swiepwald at once assumed the character of extensive wood fighting; it became an advanced post, and the advanced post became the main position: ultimately two Austrian army corps were fighting here against a Prussian division; they quitted their prescribed main position, and thus rendered our victory at the main position comparatively easy. Both the assailant and

the defender suffered great losses in this wood fighting; both lost their direction, especially the Prussians, so that ultimately they in part faced to their original rear. The direction is more easily lost in woods, especially when fighting in extensive woods, than in villages. We find it everywhere to be the case more or less. Practice may somewhat diminish the evil, but it is well to state right here that it can never be entirely removed. In the third case, the penetrable wood furnished a means, though a difficult one, for covering the approach, the deployment, and the development; but all designs in this respect miscarried, owing to lack of experience on the part of the leaders and troops, and to lack of uniformity of design. But one condition was here fulfilled: sheltering the repulsed troops, which, however, could not be promptly rallied and re-formed. All these lessons are contained in this sketch. All four examples are highly typical for the future, the success or miscarriage of the plans.

The Niederwald and the wood of Langensulzbach (Wörth, August 6th), and the Stiringwald (Spicheren, August 6th), play a different rôle, inasmuch as they could *not be traversed without fighting*, and thus made still higher demands on the leaders and troops. None of the three woods served to cover the flank of the defender effectively. Owing to various influences, the Second Bavarian Corps failed to utilize the wood of Langensulzbach as intended; the XI. Corps overcame all the difficulties of the Niederwald; of the five battalions of the Twenty-seventh Brigade (at Stiring), the battalion led by General von Woyna in person was the only one to reach that point of the Stiring-Wendel wood where he wanted them to be.

In traversing a wood while fighting, the considerations of order, steadiness, maintenance of direction and com-

munication, and of division into several columns, should receive strict attention and be the subjects of frequent practice in peace.*

In addition to the previously mentioned fir copse of Colombey (August 14, 1870), the park and wood of Goury (December 2, 1870), the Bois de Tronville (August 16, 1870), the Bois de Génivaux (August 18, 1870), and above all the group of woods of Poupry (December 2, 1870) played an important rôle in the conduct of the battle *in the main position*. The phenomena attaching to them, though varying much, coincide in several particulars, particularly as regards the stubbornness of the struggle for the edge of the wood, the losing of the direction during the struggle (Génivaux and Poupry), the intermingling of troops, and the impossibility of leading large bodies of intermixed troops (Poupry). The latter case, where the wood consisted of several separate, irregular groups, is one of the most instructive instances of wood fighting for the future, inasmuch as the conflict was partly waged at dusk, and because the dispositions for the final French attack, very properly directed against the northern angle (tactical point) because the frontal attack did not promise success, decided the possession of the wood. We have the additional example here of cavalry attacking successfully in one of the open spaces under General von Colomb.

Skillful use of woods for the protection of the retreat was made in the following cases: by the Saxons (wood of Briz, July 3, 1866); by the French (Reichshofen, August 6, 1870), and again by the French (wood of Jaumont, August 28, 1870).

*To avoid repetition I refer the reader to "Die Kämpfe um die Steinbrüche von Rozerieulles" and "Vierundzwanzig Stunden Moltke'scher Strategie" ("The Struggle for the Quarries of Rozerieulles" and "Twenty-four Hours of Moltke's Strategy"), Berlin, R. Felix, military publisher. Both by Fritz Hönig.

Lastly we come to the operative and tactical aspects of large wooded districts, their possibilities for covering the deployment, for traversing them, for battle, and for covering the retreat as exhibited by the typical instances of the forest of Orléans and that of Marchenoir.

Unless large as well as small bodies in any kind of wood scrupulously observe the simple laws of order, of keeping direction, and of control, confusion is bound to quickly ensue. In crossing a wood, painstaking care should be exercised by sending men ahead to mark the direction, and others to reconnoiter. If the edge is to be taken, the greater part of the assailants should be at once re-formed upon its capture, follow the skirmishers, and envelop the flanks of the wooded district. The important rôles heretofore played by woods are more apt to be enhanced in future than the reverse, and it is interesting and useful to consider each case in connection with the effect of modern arms. In general we are taught by military history that woods as well as localities gain their highest significance only from the quality of the troops; it is particularly true of woods. Thus the forest of Orleans was largely instrumental in the defeat of the French, while the Germans remained masters of the varying and often perilous situation, although they were themselves unable to maintain the desired communication for some time during the action. Under such conditions the struggle assumed the character of march encounters. The latter may in future, under similar circumstances, be expected to be more obstinately contested, since wood fighting will in such cases approximate that of defiles.

Village and wood fights render general control difficult, give rise to uncertainty, and easily lead to precipitate steps and wrong movements.

The leading of troop units is difficult, the units are eas-

ily disrupted; hence the great number of dispersed men in village and wood fights. The delivery of fire is restricted to short range. Since the troops deployed in wood fighting are usually beyond the control of the leaders, suitable employment of the reserves is all the more important.

XI. Of Night Battles.

The philosophy that has been formulated on the subject of losses, half of which might have been avoided by intelligent leadership, notwithstanding the employment of wrong formations against the Imperial Army in 1870, has been the cause of part of the "tacticians" desiring to transfer to the darkness of night what they no longer dare to undertake in broad daylight; and, as is usual in cases where knowledge, experience, and reflection are called for, the great majority, neither possessing the one nor liking another, have accepted the preaching of these false prophets. If one method is not suitable, another is; the example is easily settled that way. While I consider the tendency represented by the "Summer-night's Dream" as an unhealthy excrescence of a healthy idea, and criticize and reject the same only in its consequences and forms, the tendency of the "night tacticians" deserves the sharpest condemnation as being the expression of an unhealthy idea. I say purposely "darkness of night," not "night," for there are nights that are not dark, and these tacticians wish for darkness, which they think will protect them from being either seen or hit.

In order not to rest tactics on a wrong basis, we should ever start from a consideration of man; a serious-minded man can best study human weakness by making a serious study of his own nature. In making the study of himself he can easily ascertain that whatever he may be doing in the dark, he is acting with less assurance, and consequently

with less determination and effect, than in daylight. Any kind of human, intelligent, practical work requires the sense of sight; otherwise the Creator would not have given us eyes. By their means we control the action of the other senses and are enabled to make full use of them. The latter purpose requires light; in choosing darkness we relinquish one of the decisive means of action. Every tactical act is based on movement; every movement of the individual in the dark is unsteady, even walking, which is the simplest requisite for every conflict. Every phenomenon perceptible to the senses in the dark acts at first as a surprise, and frightens; no one will gainsay this who remembers how frequently one thing or another at night "made his heart beat." I could cite hundreds of cases from my own recollection; the terrifying vision only disappears upon the return of the mental faculties, usually styled presence of mind, which is somewhat incorrect, since the "presence" is subsequent to the vision and dependent on time and circumstances; nor does the vision then invariably disappear at once. If the use of his mental faculties enables man to recognize at once all the causes of terror, he will, if possessing will-power, remain master of the situation. This "orientation by means of intellect" presupposes certain conditions—above all, familiarity with the surroundings; for, if such is not the case, the intellectual powers do not triumph over the imagination as quickly as is desirable; and experience teaches that under unfamiliar circumstances and in the dark the imagination develops such power as to conjure up phantom after phantom, and to fetter the intellect completely. Man then has lost the equilibrium of his senses and powers, and is a being whom his excited imagination leads to acts of the greatest folly, precipitation, etc., which in tactics furnishes the most fruitful soil for panics. These simple truths have kept all

generals of renown from night enterprises (we speak here of great and decisive operations alone), and Cromwell is the only general who acted differently, though under justifiable circumstances. His first exploit was in the decisive battle of Dunbar on September 3, 1650. Cromwell was thoroughly familiar with the terrain and with the enemy's position, he approached during *darkness*, deployed at *dawn*, and fought and pursued in *broad daylight*. The march did not, however, exceed 2 kilometers, his forces did not exceed 12,000 men, and the roads, crossings, direction—everything was well known. His second example is the crossing of the Firth of Forth, but here also the preparations had been made to include the most minute detail, and with astounding care, and there was no real darkness during the crossing (approach), as it was a starlight night.

That all generals have shunned the dark night for decisive battle is due to the fact that they were acquainted with the human heart, an indispensable requisite of a general. It is unintelligible why "tacticians" who consider all close formations inapplicable to battle in daylight, should recommend night battles. Believing themselves unable to sufficiently control the troops in swarm formation, they choose the night so as to be able to use close formations and act intelligently. We fail to see where the intellect comes in, if the same men want to transfer the battle to the night, which renders all acts and aims difficult or wholly impossible, since they all require mutual vision and recognition. The man is unable to see his leader in the dark or to follow his example; at best he can hear his voice. If the night is light, it gives no protection against fire, and protection is what the "tacticians of darkness" want. That protection is the hobby of their theory. The splendid action of Laon on March 9, 1814, took place at night under similar

conditions as at Dunbar, at least in so far as familiarity with the terrain is concerned; but the night was not dark; it was so lit up by a clear starry sky and by the burning village of Athis as to afford fair marks by which to direct the movement; but in other respects surprise is an essential requirement of effective night battles, they bear the characteristics of the unexpected attack. It follows from the foregoing: (1) that under certain circumstances night battles may be very effective if the state of discipline of the troops makes such an undertaking feasible, if there is prospect of surprising the enemy, if terrain and enemy are well known so that the troops do not miss their objectives and the task is a simple one; (2) that the body of troops should not be greater than can be controlled on the march. In order to surprise the enemy it is necessary to approach quickly, quietly, and without fire; to march in battle formation and thus to strike the enemy, as deployment takes up too much time and diminishes the chances of surprise. Small units alone are capable of rapid and surprising movements, the distances to be traversed should be relatively short, and to assign different directions to the troops is to jeopardize combination as at Chenebier. (3) An army needs many roads for its march; it cannot move in the dark in battle formation; it cannot traverse great distances in the dark, the army corps cannot keep themselves mutually informed, they cannot be controlled; hence it is unlikely that a decisive battle will be fought in the dark. We should keep in mind the conditions on the 17th and 18th of August before the battle of Gravelotte. It would have been easy to gather full information of the terrain for the march, to start the troops in the right direction, and to maintain them on the march. Next consider the difficulties actually encountered in the movements of the two armies, the march of the Saxons and of the

X. Corps in battle formation, and then imagine such a task in future accomplished in the dark by 8 or 9 army corps. I believe that events would have been quite different from those happening in daylight! Daylight will be needed for the decisive battle in the future as it has been in the past, *night actions* will be exceptional, *night battles* are out of the question; night actions are therefore relegated to the domain of minor operations and of position warfare, where they have always been.

It is not unlikely that fine night actions like that of Podol on the 27th of June, 1866, might be repeated under similar circumstances, and it is even advisable to give leaders and men some training in that direction; the situation, however, was very simple: Assaulting a bridge and maintaining the captured bridge against attacks on open ground are very simple tactical problems, which, on a bright June night like this one, require nothing more than determination and discipline. When matters are more complicated, as they were soon afterward at Gitschin on June 29th, the disadvantages of night actions become at once apparent, even after a victory and with relatively small bodies of troops.

In the movement of an army corps a distinction is to be made between the march on the roads, the deployment in the terrain, and the continuation of the latter up to the collision with the enemy. The march of several army corps at night on roads as good as those in France presents no insurmountable difficulties for well-broken troops, and control and communication can easily exist and be maintained. I have taken part in night marches in the heat of summer and cold of winter. At the end of the first very long march, lasting from 1 p. m. until 3 a. m., the troops, not yet broken in, arrived with much straggling (4th and 5th of August,

1870). At the second and third night march (August 10, 13, 1870) we were marching by brigade through night and day with the same facility as in daylight; the night marches from Blois to La Chapelle (December 31st), thence to Vendôme (January 1st), and from Château-Renault to Blois (January 15th), were no trouble at all, notwithstanding that the last named march was through country deeply covered with snow. If the night is starlight and if the ground is covered with snow, the only real disadvantage is the loss of sleep on the part of the men. The difficulties for large units only begin after the deployment, which would have to take place not less than 5000 to 6000 meters from the enemy, if we wished to escape observation as much as possible, and even that distance might prove too small when opposed to a watchful enemy. It is unlikely that such distances could be covered by several army corps in battle formation in unknown terrain without confusion, with which result night battles would fall to the ground.

So far we have only dealt with night actions begun and ended or broken off in the dark, the approach being made in the evening or at night. There are other actions, in which the march to the battle-field was made in daytime, which were arranged and carried out in daytime, and which were not decided until dusk or dark. Foremost among such actions is that on the 3d and 4th of December, 1870, in front of Orléans; next is La Tuilérie, and a number of other instances from the battles of Le Mans, of lesser tactical and strategic import; and here I come to a point which I deem of the greatest importance. Night enterprises may fall to the lot of any troops, which is sufficient reason why they should be trained accordingly, in order that the leaders at least may have an idea of their difficulties. It is moreover to be expected that many actions, and even battles (Grave-

lotte, Orléans, Le Mans, Beaune, Loigny, St. Quentin), will be continued until late in the evening—*i. e.*, until dark, and it is there that sagacious tacticians and good troops may gain success. If, for instance, after the French withdrawal from St. Privat, the III. and X. Army Corps had been marshaled to the assault on Amanvilliers, they might have gained great results. If General von Göben had even been slightly supported by his cavalry, or if he had had some fresh infantry on the evening of January 19, 1871, the enemy's retreat would have been converted into a complete route. A few companies, boldly led, decided the battle of Le Mans by capturing La Tuilerie, for the possession of which the battalions had been contending in vain since noon; at dusk, single companies and small battalions daily took the enemy's *points d'appui* at Le Mans, all of which entailed but small losses, and even greater results could have been gained with comparatively small losses. Such tasks require strict discipline and an efficient corps of officers; it should also be borne in mind that many of these successful issues occurred in the last phase of the war, when the troops had naturally lost much of their freshness and efficiency. Decisions which could not be gained in daytime by swarms of skirmishers were thus gained by close columns not only at the end of the battle, but at the end of the war. They do not deserve to be styled "night actions"; the situation became approximately known with the assistance of snow, a starlight sky, conflagrations, and the action just preceding. We should not cling to names, but endeavor to understand the true inwardness of things, and in doing so the moral power of the troops will regain its full importance as a decisive factor. It is certain that improved arms will make the attack in daytime more difficult; and it is, on the other hand, not unlikely that by evening the

defender's strength, though he may still hold his position, is for the most part consumed by the exhausting struggle during the day. This is naturally the moment for hurling closed troops against the enemy's broken strength under the cover of dusk or darkness, and in such cases these troops must and should be expected to gain the position by their onslaught. The charging pace is most suitable for the occasion, and moral grounds will usually by themselves suffice to decide the success of a blow delivered with determination; and if any one desires to call this a night action, well and good, I do not cling to the letter; but I am convinced that night actions are very proper here, because based on human nature in tactics. Care should be taken that fresh troops be on hand at the decisive point, that they have stout hearts, and that the leaders have that "*Schneid*" which is indispensable in such enterprises. It is thus not impossible that battles which have remained undecided throughout the day may be decided in the dark; that, at any rate, is the import of the sins of omission and commission in the battles of Gravelotte, Le Mans, Loigny, St. Quentin, and even Villersexel. Thus, though our roads may diverge, I join my opponents at the goal. The future will show who is right, and if we cannot have the best we should content ourselves with the good. These decisions after dark, as recommended by me, have the grave disadvantage that, as a rule, there can be no pursuit; at least, with the exception of Waterloo, I know of none. That is certainly bad, but the suggestions made by the other side have the much graver disadvantage that in the dark large bodies cannot be led with the requisite surety. In the former case the decision will, at any rate, be gained; in the latter case we do not get as far as that.

In the Russian Army, General Kuropatkin is one of the advocates of night attacks. His arguments are, however,

chiefly based on the Tekinzen campaign and are inapplicable to European armies. Yet the reference to the moral power, which is so much emphasized both by Kuropatkin and Dragomirow, should not be underestimated. The soldier who knows only "victory or death" may generally be considered a myth. But even if that were not so, night actions would not lose their dangers, so far as the higher command is concerned.

The French have also recently dropped night battles, once so much recommended by Boulanger. The maneuvers at Châlons-sur-Marné in 1891, as is well known, ended in a grand attack at dawn, but it is doubtful whether in war an army could be suitably concentrated and disposed for the purpose.

Among the older French generals, Marshal Pelissier, who took Sebastopol by assault, was greatly opposed to night enterprises. He stated with emphasis that the chief cause of the failure of his first assault (June 18, 1855) was that it was made at night. This experienced soldier also stated that at night the men are sleepy, that many lie down and hide, and that confusion is unavoidable. If a general of the French Army then existing expresses such an opinion, what are we to expect from modern troops, who cannot lay claim to the appellation of veterans?

In America, General Early expressed himself as follows on the subject of night actions, in connection with General Jackson's death, who, as is well known, was mortally wounded by his own men in a night action in the Wilderness:

"The fire directed on General Jackson's staff, however lamentable in its results, was simply due to an accident, or rather to the confusion which is unavoidable in all cases where troops have to be maneuvered in the dark. I have perhaps been as often under fire as any living person, and

my experience and observations lead me to believe that, if the enemy is watchful, offensive movements at night, particularly at their inception, do more injury to one's own troops, through mistakes and accidental meetings, than to the enemy; I also believe that all experienced leaders agree with me. The danger is increased if the movements have to be made in a dense wood." (Wilderness.)

It is well known that it has never been determined at the hand of what troops General Jackson received his mortal wounds, and the battle of the Wilderness was won as General Jackson was about to relieve Rhodes' Division by that of A. P. Hill in order to pursue the enemy. Even under such conditions, night operations are therefore not to be recommended.

XII. Conclusion.

At the time of the introduction of the needle-gun it was the general opinion that, owing to the greater rapidity of fire of that rifle, a section of skirmishers could accomplish as much as a platoon heretofore; and it was also believed that by employing three or four times as many combatants from the beginning, the battle would be proportionately shortened. Though this was several times the case in 1866, yet the wars of 1870-71 and of 1877-78 showed that when both sides were armed with breech-loaders, battles were not more quickly decided than formerly; that, on the contrary, the struggle had become more obstinate; that the fighting power of skirmishers armed with breech-loaders was extraordinary and surprisingly great. In seeking for proofs among the prominent examples, we cannot find better ones than those of the V. Corps at Wörth, and of the III. Corps at Vionville, notwithstanding many checks in the battle.

Though the use of smokeless powder does away with all obstructions to view from smoke, and though the efficacy

of rifle and gun has been greatly increased as compared with 1870-71, it would be premature to conclude that a more rapid course and quicker decision will be the rule. That is in itself sufficient to convince those who have studied the operations preceding battle that an absolute shortening of great battles cannot be expected. Masses of 8 or 9 army corps are not killed off in a few hours. It is, moreover, beyond doubt that skirmish tactics endow the soldier with greater fighting power than any other tactics. It may, on the other hand, be assumed as fairly certain that in future the superiority of fire of one side over the other can in many cases be gained more swiftly than heretofore. It will chiefly depend on which of the opposing artilleries will first shatter that of the enemy, and it seems to me beyond doubt that superiority of training and leading may accomplish that end with great swiftness. It may therefore happen that shortly after the opening of the battle entire batteries will be disabled, to a much greater extent than the foretaste we had at Verneville (IX. Corps) and at St. Hubert (VII. Corps), and it is not too much to say that on the 18th of August, such as the situation was, the entire artillery of the 18th Division should simply have been captured by the French infantry advancing from both flanks, in the very first hour of the battle. At Wörth, on the other hand, before the attack of the corps on the flanks, the massed artillery of the V. Corps was the rock against which the billows of battle were again and again broken, and constituted the firm support of our infantry. These two examples are simply typical as regards the superiority of fire and the continuation of the action, in a negative as well as a positive sense; hence the artillery should be employed in large bodies from the beginning and covered in front and flank by infantry posted at some distance. The superiority of fire

may thus be gained step by step, and when it is accomplished, we may perhaps read of whole lines of disabled guns which a successful issue of the battle is bound to deliver into the victor's hands. This all the more as the concentration of the fire of artillery on one objective is now perfectly feasible.

Superiority of fire and the decision can not be coincident in point of time; the latter cannot be gained until the former is attained, and it also depends on whether the side which has gained the superiority of fire will have sufficient fighting power left to gain the decision. Until 4 p. m. the French had undoubtedly the superiority of fire along the whole line of battle at Gravelotte, but nevertheless failed to gain decisive advantages at any point. It is also more difficult to ascertain the superiority of fire than is popularly assumed, which is demonstrated by the action of the French left wing at Gravelotte. Artillery which is silent for some time is not necessarily disabled; it may merely be held back for the decisive moment. It follows that it would not always do to hold the actual or supposed superiority of fire equivalent to the decision; the latter requires a general forward movement against the decisive points, of which infantry alone is usually capable. (XII. and Guard Corps at St. Privat, 33d Brigade at Loigny, etc.) Hence the new arms do not change the rôles of infantry and artillery; the one cannot perform the duty of the other; the absence of smoke, etc., strengthens their combination as fighting branches; it is only now that all the requisite conditions for battle tactics are at hand.

Artillery as well as infantry must be intelligently and correctly disposed and led, and comparatively large forces of either must be engaged in order to gain the superiority of fire as soon as possible by their common effort. It is feasi-

ble in the case of either arm only after careful reconnaissance and through unity of action; hence all commanders, down to those of regiments, should be well mounted and far out in front to observe and guide the troops into the proper direction at the requisite great distances from the enemy. If artillery and infantry act from the beginning in considerable force, the further course of the action, and questions as to the employment of the arrived and of the composite bodies, need give no uneasiness. I again refer to Probus and St. Privat as examples of tactical correctness and errors; these matters have changed, not as regards principles, but as regards distances at which the preparatory measures have to be taken. They will therefore require more time than formerly, but on that account I would not jump to the conclusion, like some tacticians, that, the preparations once completed, the course of the battle proper would be swifter, for against it stand the undoubted increase of fighting power which the individual soldier derives from the much-improved arm, the greater supply of ammunition, and more careful training. Nor should we attempt to solve such questions in advance, because it is impossible and is apt to lead to wrong conclusions and ideas. In tactics we should invariably base ourselves on facts; they contain plenty of lessons for study.

Correct disposition and apportionment of the forces is impossible without the intelligent employment of formations suitable to the terrain. The only formation is that of successive lines, which is the most suitable for developing masses of skirmishers for the solution of the problem. I again refer to Probus and St. Privat (north), to Fröscheiler, Loigny, and St. Quentin. For the deployment from the marching column, "*Treffen*" are indispensable. Close

formations should therefore not be banished from the battlefield; they should rather be used with judgment.

Since the employment of strong artillery and infantry from the start is the best guarantee to gaining the superiority of fire, such employment becomes a tactical law. If the assailant, for instance, has gained the superiority of fire, the danger for intelligently led close formations becomes less. These formations may be applicable in many cases, and I repeat that then a few closed companies or small battalions will be best able to quickly decide the conflict. (Fröschweiler, Loigny, La Tuilérie.) The small-caliber arms, etc., do not make such action impossible, since a superior arm will be of small use to an enemy whose fire power is broken. Let us calmly and coolly retain and use what is good, and not stickle on rules.

It is the same way with long-range and short-range fire. The danger of running short of ammunition seems somewhat diminished by the greater number of rounds carried by the soldier, but it is at the same time increased by the magazine system and by the great range of the rifle. At Loigny 3 battalions of the Fourth Bavarian Brigade expended all their ammunition, and in the same battle the First Bavarian Division had expended so much of its ammunition by noon—*i. e.*, in an action of 4 to 5 hours—that General von der Tann had to have it supplied with ammunition before it could resume the action. Under circumstances such as here and at Beaune, where the Sixteenth and Fifty-seventh had to replenish their ammunition several times—*i. e.*, on the defensive—it will be practicable in the future also to bring up fresh ammunition; but the danger of running out of ammunition is very likely to exist in future as in the past, and so is the difficulty, perhaps impossibility, of replenishing it. Both will best be guarded against by economizing one's fire, and by opening fire as late as possible. Several

instances occurring at Wörth, where troops of the V. and XI. Corps had expended nearly all their ammunition and where any considerable supply of fresh ammunition was out of the question, urgently enjoin us to delay the opening of fire as long as possible. I do not think much of our peace methods of replenishing ammunition during the attack. For obvious reasons I abstain from going into details; the first requirement is to supply the man before the action with as much ammunition as he can carry without losing his mobility. It should also be made a rule in battle to collect the ammunition of the killed and wounded.

If infantry is capable of inflicting sensible losses on the enemy (by controlled fire, if the range is 1000 meters and over), it would be foolish not to do so. Mistakes and lack of foresight are bound to occur, and every body of troops should be formally trained in taking advantage of them. But fire and movement cannot always be so combined as though the army consisted of automatons. Fire and movement are antagonistic in their character; the antagonism may be diminished, but not altogether removed; in general the weakness of human nature inclines to making the fire a welcome pretext for halting. No one will gainsay that. It entails two disadvantages: 1, the offensive blow loses some of its force; 2, the fire is delivered at less effective ranges and encourages waste of ammunition. Every tactician should therefore strive not to open fire until medium ranges have been reached, because in point of leading there is the additional reason, that troops not firing can be more easily led than those which are firing.

Though it may be assumed that efforts to direct and lead will never be lacking, it is unlikely that this end will always be accomplished. Fire enforces dispersion, and dispersion places the colors in great danger. Keeping in mind

the Sixteenth and Fifty-seventh, it should be made a rule not to take the colors into action. Otherwise, in addition to the disabled line of artillery, quite a number of colors might be found and it would be impossible to tell how they were lost. To be sure, the account of the loss of the colors of the Sixteenth is not calculated to support that conclusion; I am opposed to all legends, however fine they may sound, because they prevent actual facts from being understood and rendered instructive. The Sixteenth did lose the colors of the second battalion, and whoever wants to see them should go to the Dome of the Invalides at Paris. The colors were not missed until the men were re-formed after the attack; one or more bullets broke the lance about the middle, presumably during the attack. On reaching the point where the colors were lying, the French carried off the upper part, the colors proper; the lower part was left on the ground, and, as the French withdrew soon afterward from this point, owing to the appearance of Rheinbaben's cavalry division, it was found there by the Sixteenth on the 17th of August. These are the simple facts, which in my opinion contain nothing derogatory to the troops. Still the loss of the colors is very apt to be considered disgraceful, and their capture is always considered glorious. These are the reasons why the facts were prettily decked out by the Sixteenth, and converted by the French into an abominable lie. I do not care to go into details, but am curious to know how long a legend will stand in print, which every experienced soldier feels is "prettily gotten up," of which I have the proofs. The French Fifty-seventh, which fought against the second battalion of the 16th Regiment, caused a statement to be printed in the *Petit Journal* in 1885, to the effect that the colors were "*pris en plein action.*" I contradicted the statement in the *Deutsche Heereszeitung*,

because reputable French military journals, like the *Avenir militaire* and *Progrès militaire*, also stated that the colors had been captured. That is not so; they were picked up.

It should not be overlooked that outflanking tactics are more theory than fact. In great battles the flanks alone are capable of effective outflanking movements, and even in that case it should be remembered that as soon as the enemy extends his line to confront the outflanking movement (which he is very apt to do), the soldier will be fighting a frontal action, and that the commander alone is doing the outflanking. But, owing to the great range of small-caliber arms, the effect of the outflanking troops engaged in a local frontal action cannot but be very severely felt in rear of the defender's front, for tactical outflanking is *eo ipso* favorable for a speedy attainment of the superiority of fire, since the theoretically ideal concentration of fire is rendered practicable only by delivering the same from two lines making an angle one with the other, while the absence of smoke in turn is favorable for concentrating the fire of both fronts, and of infantry and of artillery, on the objective. Outflanking the enemy—with all three arms—is the most effective form of attack, and admits of great variety in execution.

This tactical law should not mislead us to hold the frontal action in light esteem, which seems to be the case more or less. The front must not only be kept busy in the future as it was in the past, but should be attacked with great energy; it would be wrong not to take full advantage of the fire power and of the offensive power of infantry and artillery. We should keep in mind the services rendered by both arms at Wörth, Vionville, and Loigny. No timidity should be allowed to creep into our ideas. War demands sacrifices, and every decision exacts blood; troops in the front line will in the future, as they did in the past, take a

prominent part in the decision, otherwise the enemy is apt to crush the weak front; mistakes and weakness render this as possible to-day as it was in the days of Napoleon I., the only difference being that such a man is not always present. Hence we should not try to overdo the outflanking: where the front is not sufficiently strong, outflanking is wrong. We cannot give figures; numerical conditions in themselves make the front neither strong nor weak—it is the manner in which the figures are applied in the front. At any rate, we insist that the soldier should know nothing but to be the first in attack and the last in defense; and, in the future, as in the past, battles will be decided by stout hearts and bright minds who know how to use the improved arms. The latter may be overcome by the former, the former by the latter never! The most favorable case is, of course, if the stout hearts and bright minds in combination have at their disposal superior arms; yet all the advantages will rarely be found on one side.

With well-disciplined troops, of good *morale* and in the hands of determined leaders, the decisive blow, which many reasons may combine in making unpromising of success in daytime, will retain its full tactical value in the evening, at dusk, and in the dark, not to mention foggy and misty days. During the battles in front of Le Mans in 1871, all points were simply assaulted at dusk with hurrah and beating of drums, and among many successful cases I know of but one failure. This is another case where close formations are suitable; such things can, in fact, not be accomplished in any other way.

In general the future fire action may be said to take place chiefly between 600 and 300 meters, and to reach its culmination between 400 and 300 meters; there will be exceptions, of course. The leaders must be sufficiently famil-

iar with the ballistic qualities of the small-caliber arms to know how far in each case they may push their swarms forward. Lack of such knowledge will cost much precious blood.

It is idle to argue whether the infantry or artillery derives greater advantage from smokeless powder; in my opinion, both have enormously gained in tactical value from this invention, and both at the expense of the cavalry; and however strenuously I have contended for the retention of that arm on the battle-field, I consider its useful employment there as extremely difficult. But when the hostile army is morally and physically broken by the exhaustive fire fight, well-led cavalry may be upon the enemy before he has recovered; battles will be preceded by great cavalry actions, since it is necessary to defeat the enemy's cavalry before we can observe, reconnoiter, and make our last dispositions. I consider it so great and honorable a duty, that the cavalry might well be content; in any event, in small or large bodies, cavalry will have to do much fighting, and it consequently continues to be a battle arm, since it makes no difference, so far as the effect is concerned, whether it is produced at the beginning or at the end of the battle, or *ad interim*. The characteristic duties of cavalry can never be performed by the other arms.

I have repeatedly stated that Gravelotte seems to be about the typical battle of the future, but I am of the opinion that when the position is of greater natural or artificial strength, the decision may not arrive until the second day or later. Perhaps we shall resort to battles of circumvallation. Belgrad, Mantua, Plevna may be repeated in more or less similar form. For it is not impossible that the assailant may not gain a victorious battle at all, that he may enclose the defender by a circumvallation where he

finds him, that attempts at relief may bring on several battles, etc., until hunger and exhaustion compel the invested defender to surrender.

I also believe that an offensive of Moltke's kind will hardly be seen again. Everything points to an obstinate defense on the frontier and to the continuation of the defense on a grand scale in fortified districts. The war will progress spasmodically. A protracted struggle will be waged for positions, exacting much blood and other sacrifices, and that side which possesses the greater endurance and gains permanent superiority by means of a well-selected base, etc., will gain the ultimate victory and witness the complete collapse of the material and moral force of the opponent. It follows that greater enterprises will be launched against the vital arteries of an army. The war will thus be carried abruptly from stage to stage, with complete annihilation of one side at each stage, and the stages themselves may be much protracted. Metz, Paris, Belfort, Plevna, and Schipka are cases in point.

Though smokeless powder does not introduce new principles into tactics, still it greatly modifies existing ones, and affects the conduct of the war where tactics and strategy blend. When there is no smoke, one can of course see as far as it is at all possible to see; hence the defender, or rather both sides, will be able to watch the approach and deployment beyond the line of battle, which is important, particularly in prepared positions; and we should not permit ourselves to believe that it can be obviated by a skillful use of the topographical conditions, since we shall have to take the theater of operations as we find it. In some cases unobserved approach and deployment may be possible, and impossible in others, and in the latter case the assailant will encounter difficulties which he should not underestimate.

When the weather is not quite clear (in fog, or rain), unobstructed view no longer exists; in our climate, misty days are not at all rare, particularly in the fall, spring, and winter. What advantage would the new powder have conferred on the Prussians at Jena, on the Austrians at Königgrätz, on the French at Sedan, on the latter in most of the battles and actions during the winter? But, under conditions similar to those obtaining at Kissingen, neither party would derive much advantage from the small-caliber rifle—*i. e.*, the terrain may remove all advantages. Hence topography and weather put a considerable curb on theory.

Another tactically important point is the color of the uniforms. In order to make cavalry as inconspicuous as possible, all glaring colors should be removed from its uniforms, especially white and red; in the infantry also the bright helmet trimmings should be discarded and all metal parts, particularly of the rifle, should be of dull color. It has been my observation in the peace exercises that hostile infantry ensconced and concealed at 300 to 400 meters betrayed itself by its helmets and by the motions of loading and firing; even at more than 1000 meters the infantry was only discovered by the movements of rifles—metal parts glistening in the sunlight—whereupon the artillery was able to take it under fire.

Something else I want to mention: On the 18th of August, 1870, I was able from near Remilly—*i. e.*, more than 6 German miles (about 30 English miles.—*Tr.*) distant—to make out the opposing lines of fire with the bare eye, which, as I afterward learned, were hanging curtainlike in dense white clouds over the battle-field of Gravelotte, and this although not a sound could be heard.

The principal cause of the defeat of the Thirty-eighth Brigade on the 16th of August was the fact that the French

approached under the cover of smoke, and, without firing a shot, attacked us suddenly at close quarters; the smoke prevented us from seeing the danger. In the former case, the smoke might have been of some advantage for the superior leading in case of unsuitable arrangements for the march; in the latter, the smoke conferred an advantage on the defender and a disadvantage on the assailant. It is safe to assume that the assailant would not have rushed to the front without halting had he known that, without being aware of it, as it were, he was intermingling with the enemy; he would have been more cautious and would at least have been able to fight an energetic, defensive fire action, for which the surprise left him no time. When the view is unobstructed, smokeless powder acts as a safeguard against any kind of surprise, which both sides should constantly bear in mind.

Nor should we allow ourselves to be guided by the theoretical fancies hatched in the studio as regards unobstructed view; but we should endeavor to gain a clear conception of true warlike situations. At Gravelotte the French might have observed all movements of the Germans from Montigny la Grange as far as Roncourt with the same facility which is now theoretically claimed to be invariably the case with smokeless powder. There was nothing to hinder it, there was no smoke because the battle did not begin until after the movement and deployment, the air was clear, and yet the IX. Army Corps surprised the enemy; although the battle was raging at that point, the enemy, who had an unobstructed view from St. Privat of all our movements, did nothing to check or disturb our turning movement. In such cases, smokeless powder changes nothing, since before the opening of the battle one could formerly see just as far as to-day. The theory of war should therefore not reckon

without the shortcomings and failings of man; they are the chief sources of victory for the opponent. He will ever be the victor who makes the fewest mistakes!

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